REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORKPLAN FOR WALKER PROPERTIES

11102 BLOOMFIELD AVENUE
SANTA FE SPRINGS ● CALIFORNIA

DECEMBER 1988

EMCON
ASSOCIATES

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REMEDIAL INVESTIGATION/FEASIBILITY STUDY
WORKPLAN FOR WALKER PROPERTIES
11102 BLOOMFIELD AVENUE
SANTA FE SPRINGS, CALIFORNIA

Prepared for:

Mr. George Walker

December 1988

Prepared by:

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Project No. B15-01.01

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1.0 INTRODUCTION

This Remedial Investigation/Feasibility Study (RI/FS) Workplan has been prepared pursuant to the requirements of an Agreement entered into by the property owner, Mr. George Walker, and the Los Angeles County Department of Health Services. The principal objective of the RI/FS is to determine the nature and extent of contamination at the Walker Properties site, located on the southeast corner of Bloomfield Avenue and Lakeland Road in Santa Fe Springs, California. The RI/FS is intended to (1) identify potential contamination migration pathways, (2) evaluate the potential harm to public health, safety or welfare or to the environment posed by conditions at the site, and (3) identify and evaluate appropriate remedial measures.

This Workplan, consisting of eight major sections, has been prepared based on a review of the documents listed in Table 1.1. The Workplan sections are:

1.0 Introduction

2.0 Site History and Summary of Previous Investigations

3.0 Contaminant Assessment

4.0 Workplan

5.0 Data Management Plan

6.0 Quality Assurance Project Plan

7.0 Health and Safety Plan

8.0 Community Relations Plan

TABLE 1.1

DOCUMENTS REVIEWED IN PREPARATION OF WORKPLAN

Date	Author, Title and Subject
6/61:	California Department of Water Resources; Bulletin No. 104.
9/6/67:	Sladden Engineering; Report of Compacted Fills, Getty Oil Company, Baker Fee Property, Lakeland Street and Bloomfield Avenue, City of Santa Fe Springs, California.
5/83:	California Department of Health Services; Abandoned Site Project, Site Information Summary.
9/30/83:	California Department of Health Services; Letter to Mr. Robert White, Health Officer, County of Los Angeles. Re: List of known abandoned hazardous waste sites identified in L.A. County.
11/15/83:	California Department of Health Services; Letter to Mr. Robert White, Health Officer, County of Los Angeles. Re: Project name change from "Rothschild Oil Company" to "1956-1965 Sump Site".
3/20/85:	Dames & Moore; Soil Sampling Plan, Former Getty Property, Lakeland Road and Bloomfield Avenue, Santa Fe Springs, California.
7/1/85:	Dames & Moore; Draft Report, Subsurface Investigation, Former Getty Property, Santa Fe Springs, California. Re: Results of sampling nine boreholes.
8/85:	U.S. EPA; Verification of PCB Spill Cleanup by Sampling and Analysis.

8/1/85: City of Santa Fe Springs; Letter to Ms. Harriet Tregoning, California Department of Health Services. Re: Request for advice.

10/15/85: MacDonald, Fabozzi & Prenevost; Letter to Mr. George Beaty, City of Santa Fe Springs. Re: Proposal for mitigating hazardous waste at Walker Properties site.

11/7/85: City of Santa Fe Springs; Letter to Mr. Jim Smith, California Department of Health Services. Re: Request for meeting.

11/27/85: Dames & Moore; Draft Action Plan, Walker Properties, for City of Santa Fe Springs.

12/2/85: City of Santa Fe Springs; Memorandum to Members of the Environmental Review and Advisory Committee.

12/12/85: City of Santa Fe Springs; Staff Report, Retention of Consultant to Perform Hazardous Waste Evaluations and Studies.

12/17/85: City of Santa Fe Springs; Sign-Up Sheet, Meeting of 12/11/85.

12/26/85: City of Santa Fe Springs; Staff Report, Retention of Consultant to Perform Hazardous Waste Evaluations and Studies.

1/86: IT Corporation; Investigation and Site Assessment for Subsurface Contamination, Powerine Oil Refinery, Santa Fe Springs, CA.

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1/9/86: City of Santa Fe Springs; Letter to Mr. Thomas Prenevost, MacDonald, Fabozzi & Prenevost. Re: Draft Action Plan.

3/20/86: Dames & Moore; Record of Telephone Conversation with Mr. Jim Smith, California Department of Health Services. Re: Soil Cleanup Levels.

4/3/86: Dames & Moore; Analytical Results, Phase II Drilling and Sampling Program, Walker Properties Site.

4/22/86: California Department of Health Services; Letter to Dames & Moore. Re: Request for analysis of PCBs and non-volatile organics of Phase II samples.

5/86: U.S. EPA; Development of Advisory Levels for Polychlorinated Biphenyls Cleanup. PCB cu ?

5/86: U.S. EPA; Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup. PCB sampling

5/7/86: Dames & Moore; Results of PCB Analysis, Phase II Drilling and Sampling Program, Walker Properties Site.

5/23/86: Dames & Moore; Letter to City of Santa Fe Springs. Re: Results of PCB analysis.

6/5/86: California Department of Health Services; Letter to City of Santa Fe Springs. Re: Condition of eastern portion of property.

10/8/86: Dames & Moore; Draft Report, Underground Tank Removal Observations, Soil Sampling Program, Walker Properties Site.

10/16/86: Dames & Moore; Report, Site Assessment Recommendations, Walker Properties Site.

10/23/86: Redevelopment Agency of the City of Santa Fe Springs and George Walker; Agreement.

11/14/86: Dames & Moore; Report, Additional Site Investigation, Walker Properties Site.

11/24/86: City of Santa Fe Springs; Notes from Committee Meeting.

1/87: California Department of Health Services; Expenditure Plan for the Hazardous Substance Clean-Up Bond Act of 1984.

4/2/87: U.S. EPA; Polychlorinated Biphenyls Spill Cleanup Policy (Published in Federal Register). PCB co.

4/17/87: Fabozzi, Prenevost & Normandin; Letter to California Department of Health Services. Re: Fencing the property.

5/7/87: Fabozzi, Prenevost & Normandin; Letter to City of Santa Fe Springs. Re: Request for loan to cleanup property.

5/18/87: City of Santa Fe Springs; Memorandum to the Honorable Redevelopment Agency Board. Re: Consideration of loan request.

6/24/87: California Department of Health Services; Documentation Records for Hazard Ranking System.

7/2/87: City of Santa Fe Springs; Memorandum to the Honorable Redevelopment Agency Board. Re: Consideration of loan document.

9/87: James M. Montgomery, Consulting Engineers, Inc.; Workplan for a Remedial Investigation/Feasibility Study at the Neville Chemical Company Site, Santa Fe Springs, CA, Final.

10/12/87: Fabozzi, Prenevost & Normandin; Letter to City of Santa Fe Springs. Re: Confirmation of meeting.

1/88: ERT; Fourth Quarter Monitoring Report, Powerine Oil Refinery.

1/88: California Department of Health Services; Expenditure Plan for the Hazardous Substance Cleanup Bond Act of 1984.

2/11/88: Turner Development Corporation; Letter to California Department of Health Services with Draft Consent Order. Re: Update on project.

3/8/88: Turner Development Corporation; Letter to City of Santa Fe Springs. Re: Update on project.

3/23/88: City of Santa Fe Springs; Meeting Notes.

5/20/88: City of Santa Fe Springs; Memorandum to the Honorable Redevelopment Agency Board.

6/1/88: EMCON Associates; Letter to California Department of Health Services. Re: Request for approval of agreement with County.

6/7/88: EMCON Associates; Letter to County of Los Angeles. Re: Project Update.

6/17/88: EMCON Associates; Letter to County of Los Angeles. Re: Proposed sampling on eastern portion of property.

6/24/88: California Department of Health Services; Letter to Mr. George Walker. Re: Approval of agreement with County.

6/30/88: EMCON Associates; Letter to County of Los Angeles. Re: Schedule for soil sampling.

8/2/88: EMCON Associates; Results of Soil Sampling at the Walker Properties Site, Santa Fe Springs, California.

8/3/88: EMCON Associates; Letter to California Department of Health Services. Re: Certification of Parcel 1, Walker Properties Site, Santa Fe Springs, California.

9/21/88: EMCON Associates; Letter to California Department of Health Services. Re: Supplement to Certification Form for Walker Properties Site, Parcel 1.

2.0 SITE HISTORY AND SUMMARY OF PREVIOUS INVESTIGATIONS

2.1 SITE DESCRIPTION AND HISTORY

The Walker Properties site ~~is~~ located on the southeast corner of the intersection of Lakeland Road and Bloomfield Avenue in Santa Fe Springs, California (Figure 2.1). The following description of past property use was developed based on information provided by the current property owner, Mr. Walker, and by officials from the City of Santa Fe Springs (City).

The property (Figure 2.2) was originally developed by Getty Oil Company in the early 1900's. Getty Oil reportedly used the property as a hydrocarbon handling facility.

Borings 6, 3, 4?? of this report

Aerial photographs from the 1950's and 1960's, provided by the City, show several sumps on the property which were reportedly used for the disposal of drilling fluids and muds. According to a report prepared by Sladden Engineering, when the entire eastern portion of the site was graded in 1967, mud and debris were removed from the sumps and were spread about the site to dry. The sumps were re-filled to grade using a mixture of this air-dried material and clean soil. A natural drainage course in the eastern portion of the property was also filled to grade and was replaced by the City of Santa Fe Springs with a buried 42-inch storm sewer line.

Sumps

In the late 1950's or early 1960's, Lakewood Oil Service, Inc. (Lakewood) began leasing the northwestern portion of the property (Parcel 3) for use as a waste oil transfer station. Powerine Oil Company leased the two large aboveground storage tanks located on the southwestern end of the property (Parcel 2). Tank No. 1 reportedly held crude oil and Tank No. 2 contained jet fuel. In addition, Powerine Oil used a butane gas distribution line which ran from their

Parcel 3

Parcel 2

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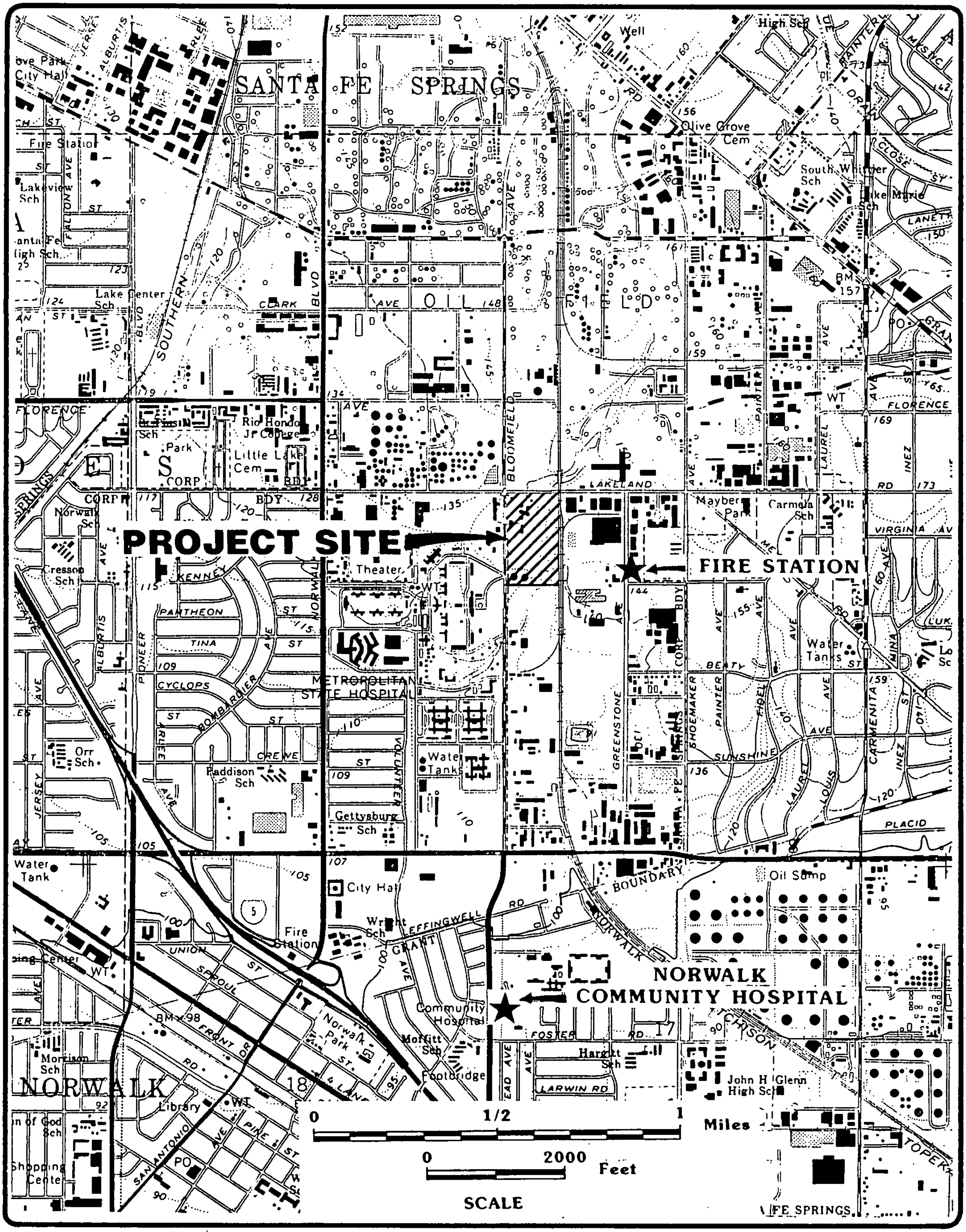

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WALKER PROPERTIES
11102 BLOOMFIELD AVE.
SANTA FE SPRINGS, CALIFORNIA

SITE LOCATION MAP

FIGURE
2.1
PROJECT NO.
B15-01.01

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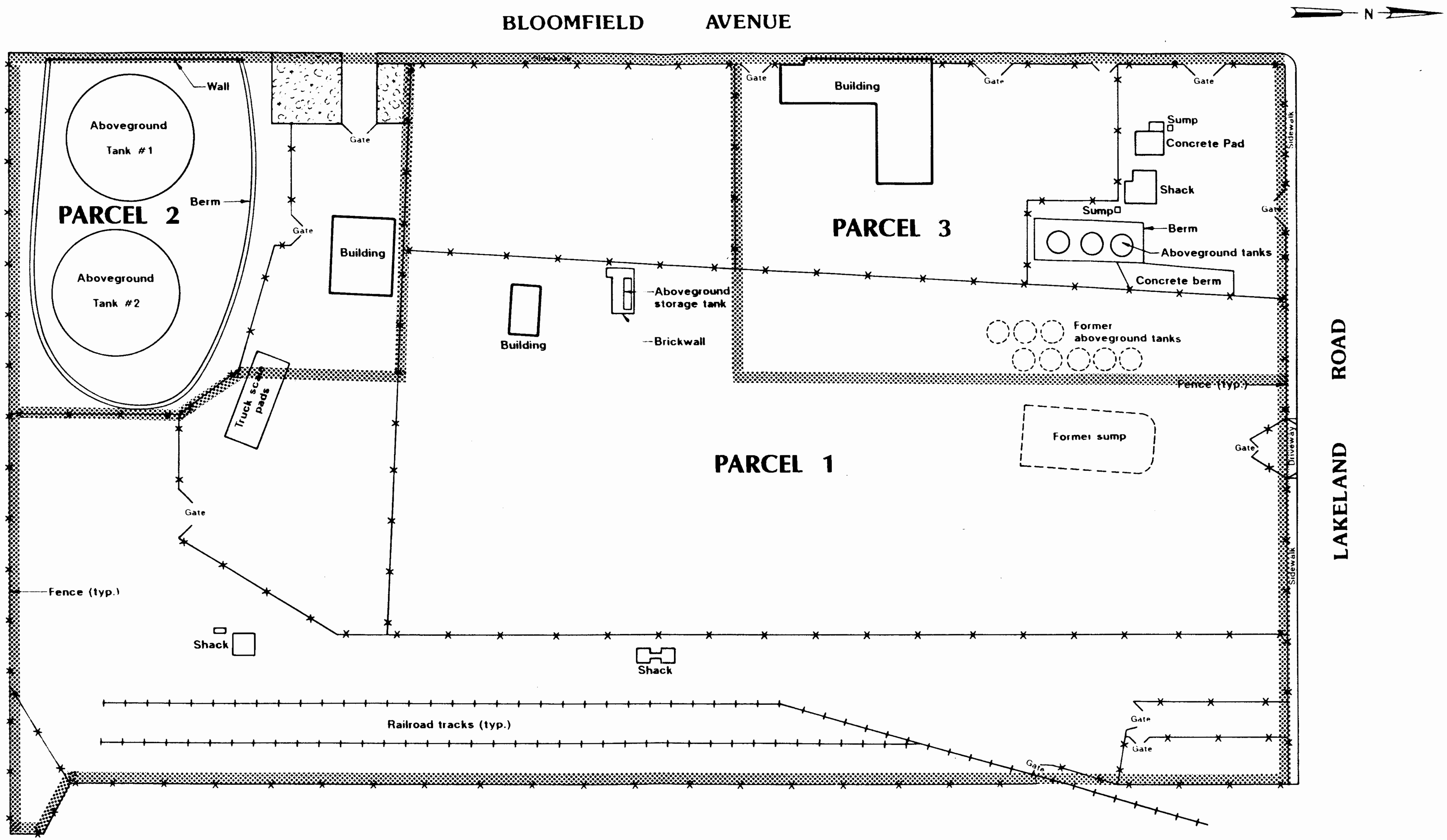

jb 7/27/88

NOTE: Property boundaries and facility locations are approximate

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0 100 200 300 Feet

SCALE

WALKER PROPERTIES

SANTA FE SPRINGS, CALIFORNIA

SITE PLAN

FIGURE 2.2

PROJECT NO. B15-01.01

refinery (located on the northwest corner of the intersection of Lakeland Road and Bloomfield Avenue), south on Bloomfield Road, east across the Walker Properties site to the railroad spur located near the eastern boundary. The exact location of this butane line is not known at this time. Powerine Oil emptied the large storage tanks, abandoned the distribution line, and left the property when they went bankrupt in the early 1980's. A third company, Airco, reportedly used a portion of Parcel 1 to collect carbon dioxide gas from the Powerine Refinery. The location of Airco's previous operations is not known.

Walker bought 1979

When Mr. George Walker purchased the property in 1979, both Lakewood and Powerine Oil continued as tenants until their respective bankruptcies. Mr. Walker used a portion of the property as offices and as a storage yard for empty rubbish trucks and rubbish containers.

Currently, portions of the property are being leased by Balboa-Pacific Corporation, a business which has developed a transportable treatment unit for wastes and wastewaters (no treatment is done at the Walker Properties site), and by Gross Construction Company for the storage of heavy construction machinery and equipment.

2.2 HISTORY OF REGULATORY AGENCY INVOLVEMENT

In 1982, the California Department of Health Services (DHS) conducted a survey for abandoned hazardous waste sites in Los Angeles County. Through their search of aerial photographs, DHS discovered the sumps which had previously been located on the Walker Properties site. Two sumps reportedly appeared in a 1956 aerial photograph, but only one sump appeared on the 1960 and 1965 photographs (location of former sump is shown on Figure 2.2). After a field inspection in October 1982, DHS recommended that core sampling was needed in the area of the former sumps.

3/85 7/85 30 more?

Based on this recommendation, the property owner (Mr. George Walker) began to investigate potential areas for hazardous waste contamination. Section 2.3 provides a summary of each of these previous investigations. An assessment of the combined results of these various studies is provided in Section 3.0 of this Workplan.

The information collected during the initial investigations performed by Dames & Moore was submitted to the DHS for review. Based on this information, the DHS listed Walker Properties as a Potential Category 1 site in the 1986 version of the Expenditure Plan for the Hazardous Substance Cleanup Bond Act of 1984 (Expenditure Plan). The Expenditure Plan replaced the old State Priority Ranking List (also called the "State Superfund List"). In the January 1988 revision of the Expenditure Plan, the State is not scheduled to order Mr. Walker to cleanup the site until May 1992, with actual cleanup scheduled for December 1994. The Agreement between Mr. Walker and the County could be construed as complying with the administrative order requirements of the California Health and Safety Code. Therefore, the cleanup of this site is expected to be completed before May 1989, over five and a half years ahead of the State's schedule. !?

2.3 SUMMARY OF INVESTIGATIONS

2.3.1 Phase I

Source: Dames & Moore; Draft Report, Subsurface Investigation, Former Getty Property, July 1, 1985

Date of Sampling: April 22 to April 26, 1985

4/85

Purpose of Sampling: As stated by Dames & Moore, the purpose of the sampling was to address DHS's concerns regarding the possibility that potentially hazardous substances occur on site.

Location of Sampling Points: The location of the Dames & Moore sampling points are shown as Borings 1, 2, 3, 4, 5A, 5B, 6, 7A, 7B, and 8 on Figure 2.3. Borings 1 and 2 were drilled at angles beneath the large aboveground storage tanks in the southwestern corner of the property (Parcel 2). Borings 3, 4 and 6 were drilled in the suspected areas of former sumps on Parcel 1. Borings 5A and 5B were drilled in the location of the former drainage which was filled in 1967. Borings 7A, 7B, 7C and 8 were drilled at angles beneath the aboveground and underground tanks in the northwestern portion of the site (Parcel 3).

Boring 7C no samples

4/85 D&M

Analytical Results: In consultation with Ms. Harriet Tregoning of DHS, 10 soil samples were selected for analysis by California Analytical Laboratories in Sacramento, California for total organic carbon (TOC), total organic halogens (TOX), volatile halogenated organics (EPA Method 8010), volatile aromatics (EPA Method 8020), organochlorine pesticides and polychlorinated biphenyls (PCBs) (EPA Method 8080), and CAM metals (listed in Title 22, California Code of Regulations).

analytes?

Borings 1&2 Parcel 2 did not test for PCB?

The analytical results of this investigation are summarized in Table 2.1. Of the samples collected from borings drilled on the southern portion of the property (Borings No. 1, 2, 3, and 4) no volatile halogenated organics, volatile aromatics, PCBs or pesticides were detected. Only lead and barium concentrations appeared to be slightly elevated; however, these concentrations were below the Total Threshold Limit Concentrations (TTLC) and less than ten times the Soluble Threshold Limit Concentrations (STLC) for these metals. The TTLC and STLC are regulatory values listed in California Code of Regulations, Title 22.

The samples from borings drilled in the former drainage area (5A and 5B) contained detectable concentrations of volatile compounds and somewhat elevated concentrations of barium and lead. Samples analyzed from Boring 6, drilled in the area of a former sump, showed

Total depth?

TABLE 2.1

Project No.: B15-01.01

SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED IN APRIL 1985 BY DAMES & MOORE.

BORING NO.	SAMPLE NOS.	SAMPLE DEPTH RANGE (feet)	TOC (%)	TOX (ppm)	8010 VOLATILE HALOGENATED ORGANICS (ug/g)	8020 VOLATILE AROMATICS (ug/g)	ORGANOCHLORINE PESTICIDES AND PCB'S (ug/g)	CAM-TTLC METALS (mg/kg) no PCB test
1 Parcel 2	[6-7-8-9]	25-40	0.2	ND (5)	ND (0.05)	ND (0.05)	NA	Ba = 42 Pb = ND (5)
2	[5-6]	25-30	ND (0.1)	ND (5)	ND (0.05)	ND (0.05)	NA	Ba = 36 Pb = ND (5)
3	[5-6]	11-13.5	ND (0.1)	ND (5)	ND (0.05)	ND (0.05)	ND (0.8)	Ba = 47 Pb = ND (5)
4 Parcel 1	[1-3-4]	1.5-8.5	ND (0.1)	ND (5)	ND (0.05)	ND (0.05)	ND (0.8)	Ba = 163 Pb = 5.1
5A	[2-3]	3.5-6	3	ND (5)	ND (0.05)	Tol = 0.64 = 640 ppb = 6.5x AL	ND (0.8)	Ba = 760 Pb = 30
5B	2	3.5	3	ND (5)	1,1,1-TCA = 0.07 TCE = 0.25 = 250 ppb = 50x AL PCE = 0.11 = 110 = 25x AL	Tol = 0.49 = 4.9x AL	ND (0.8)	Ba = 2520 Pb = 88
6	[3-4-5-6]	6-13.5	ND (0.1)	ND (5)	~~ND (0.05)~~	ND (0.05)	ND (0.8)	Ba = 96 Pb = 6.5
7A Parcel 3	[2-3-4]	4.5-9.5	0.2	ND (5)	ND (0.05)	Tol = 0.06	ND (0.8)	Ba = 221 Pb = ND (5)
7B	[1-2]	2-3.5	7	ND (5)	1,1-DCA = 4.4 = 4400 ppm AL=1 1,1,1-TCA = 9.7 = 9700 ppm AL=200 TCE = 32 = 32,000 ppb PCE = 12 = 12,000 ppb = 3000 x AL	Tol = 62 = 62000 ppb ~~ppm~~ Eb = 5.5 ≈ 6000 x AL Xyl = 44	PCB-1248 = 94	Ba = 572 Pb = 1450
7C no samples run!?								
8	[8-9]	20.5-25	ND (0.1)	ND (5)	ND (0.05)	ND (0.05)	ND (0.8)	Ba = 36 Pb = ND (5)

Note: Only detectable concentrations of halogenated organics and volatile organics shown on Table 2.1. Complete analyses shown on laboratory report (Appendix A).

1,2 DCA AL = 1 ppb
111 TCA AL = 200 ppb

TOC = Total Organic Carbon.	DCA = Dichloroethane factor ≈ 6000	Tol = Toluene AL = 100	Pb = Lead
TOX = Total Organic Halides.	TCA = Trichloroethane	Eb = Ethylbenzene AL = 680	Ba = Barium
[ ] = Indicates composite sample.	TCE = Trichloroethylene AL = 5 ppb	Xyl = Total Xylenes AL = 620	
ND = Not detected (detection limit).	PCE = Tetrachloroethylene AL = 4 ppb factor 3000		
NA = Not analyzed.			

Reference: Dames & Moore: Draft Report, Subsurface Investigation, Former Getty Property, Santa Fe Springs, CA., July, 1, 1985.

non-detectable concentrations of all chemicals, except that metals, including lead and barium, were detected at very low concentrations.

The most significant indication of contamination was found in samples collected from Borings 7A and 7B. Volatile halogenated compounds, volatile aromatics, PCBs, and lead were found in elevated concentrations.

2.3.2 Phase II

Source: Dames & Moore; Analytical Results, Phase II Drilling and Sampling Program, Walker Properties Site, April 3, 1986

3/86 D&M

Date of Sampling: March 7, 1986

Purpose of Sampling: To further evaluate the nature of lead and barium contamination on the eastern portion of the property (Parcel 1).

Location of Samples: Six additional borings were drilled in the location of the former drainage area. These borings are labeled as 5C, 5D, 5E, 5F, 5G and 5H on Figure 2.3.

Analytical Results: Seven samples were analyzed for metals and one sample was analyzed for volatile aromatics. The analyses were performed by California Analytical Laboratories. None of the total metal concentrations in any of the samples exceeded their respective TTLCs. In cases where the total concentration of a particular element exceeded 10 times the STLC for that element, modified Waste Extraction Tests (WETs) were conducted with de-ionized water. None of the WETs yielded detectable concentrations of lead or barium. The analytical results are summarized in Table 2.2.

5E!! ??

??? ?

authority? reason?

TABLE 2.2

SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES
COLLECTED IN MARCH 1986 (PARCEL 1)

Boring No.	Sample Depth Range (feet)	Total Lead (mg/kg)	Soluble Lead (mg/L)	Total Barium (mg/kg)	Soluble Barium (mg/L)
5C	5 - 6	52	ND (1.0)	1120 **	ND (0.5)
5D	5 - 6	37	ND (1.0)	615	ND (0.5)
5E	5 - 6	17	NA	473	ND (0.5)
~~5F~~ 5E	20 - 21 ??	ND (5)	NA	49	ND (NA)
5G	5 - 6	93	ND (0.5)	248	ND (1)
5H	4 - 5	98	ND (1)	526	ND (0.5)

NOTE: ND = Not Detected at detection limit shown in parentheses.
NA = Not Analyzed

Reference: Dames & Moore; Analytical Results, Phase II Drilling and Sampling Program, Walker Properties site, April 3, 1986.

5E and 5F sampled @ [illegible]

Total Boring D on 5F = 19'

??

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2.3.3 Phase IIA

5/86
D&M

Source: Dames & Moore; Results of PCB Analysis, Phase II Drilling and Sampling Program, Walker Properties Site, May 7, 1986

Date of Sampling: March 7, 1986

Purpose of Sampling: Additional analysis for PCBs requested by DHS for samples previously collected.

Location of Samples: Same as reported in April 3, 1986 report by Dames & Moore (Section 2.3.2).

Analytical Results: No PCBs were detected in any of the samples. The analyses were performed by California Analytical Laboratories.

2.3.4 Phase III

10/86
D&M

Source: Dames & Moore; Draft Report, Underground Tank Removal Observations, Soil Sampling Program, Walker Properties Site, October 8, 1986

Date of Sampling: September 18, 1986

Purpose of Sampling: The purpose of the soil sampling program was to evaluate whether contamination exists in an excavation in the northwestern corner of the property (Parcel 3) where an underground tank was removed.

Location of Samples: Four samples were collected from the sidewalls and base of the underground tank excavation. These samples are shown as E-1, E-2, E-3, and E-4 on Figure 2.4.

Analytical Results: The analytical results are summarized in Table 2.3. The samples were analyzed for CAM metals and PCBs (EPA Method 8080) by International Technology Corporation.

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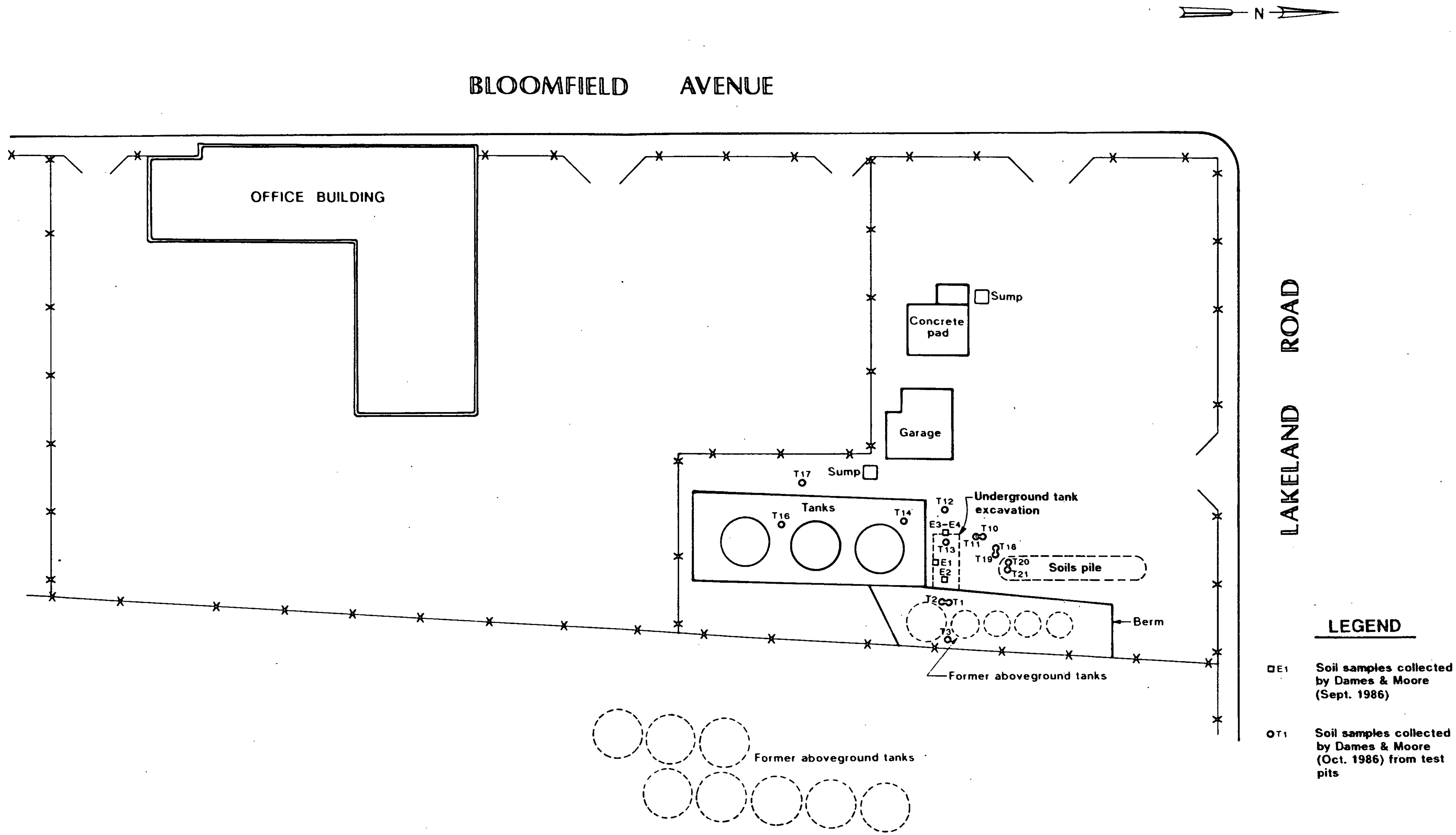

NOTE: LOCATION OF SAMPLES T5, T23, AND T24 REPORTED BY DAMES & MOORE WERE NOT INDICATED ON THEIR SITE LOCATION MAP

NOTE: Property boundaries, facility and sampling locations are approximate.

jb 7/28/88

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0 50 100 150 200 Feet
SCALE

WALKER PROPERTIES
SANTA FE SPRINGS, CALIFORNIA

LOCATION OF SOIL SAMPLES COLLECTED BY DAMES & MOORE (SEPTEMBER - OCTOBER 1986)

FIGURE 2.4
PROJECT NO. B15-01.01

TABLE 2.3

Project No.: B15-01.01

SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM THE UNDERGROUND TANK EXCAVATION AND TEST PITS (September-November 1986) BY DAMES & MOORE.

CONSTITUENT	SAMPLE AND CONCENTRATION (PPM) (3)																				
	E-1 (1)	E-2	E-3	E-4	T-1 (2)	T-2	T-3	T-5	T-10	T-11	T-12	T-13	T-14	T-16	T-17	T-18	T-19	T-20	T-21	T-23	T-24
Arsenic	2.63	4.39	1.42	2.50	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)	ND(40)
Barium	190	150	260	190	127	216	118	127	256	164	164	178	1260	158	126	760	131	68	180	88	84
Beryllium	0.5	0.4	ND(0.3)	0.7	ND(0.5)	0.82	ND(0.5)	ND(0.5)	ND(0.5)	0.59	0.58	0.64	1.1	0.6	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.53	ND(0.5)	ND(0.5)
Cadmium	3.1	2.1	1.7	3.1	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.71	ND(0.5)	0.71	ND(0.5)	35	ND(0.5)	0.86	0.97	ND(0.5)	0.58	ND(0.5)	ND(0.5)	ND(0.5)
Chromium (Total)	26	23	16	30	21	33	17	18	22	25	28	31	119	26	21	24	22	9.7	27	9.3	10
Cobalt	14	12	6.0	16	9.9	15	7.6	9.0	8.1	12	11	13	8.4	12	5.8	8.4	10	3.9	11	3.4	4.9
Copper	32	38	16	27	20	30	16	20	46	23	29	26	5140	29	191	36	26	13	28	30	14
Lead	130	54	1100	74	9.1	15	7.6	8.1	438	10	220	12	2470	17	276	450	15	48	138	120	21
Mercury	0.17	ND(0.1)	0.13	0.12	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	0.5	ND(0.1)	ND(0.1)	0.13	ND(0.1)	ND(0.1)	ND(0.1)	0.38	ND(0.1)
Molybdenum	1.2	1.0	0.7	0.9	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	73	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Nickel	18	16	10	20	16	24	13	16	14	20	19	24	69	20	16	17	16	9.9	21	8.5	9.4
Silver	1.3	1.5	ND(0.3)	ND(0.3)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	14	ND(2)	ND(2)	2.2	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Vanadium	63	55	32	74	37	63	32	33	30	46	46	48	20	47	17	30	38	18	45	13	19
Zinc	120	100	490	74	43	58	34	46	91	50	155	56	1370	53	122	140	47	184	105	84	68

Continued next page

Zn & Cu & others?

Project No.: B15-01.01

TABLE 2.3

SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM THE UNDERGROUND TANK EXCAVATION AND TEST PITS (September-November 1986) BY DAMES & MOORE.

CONSTITUENT	SAMPLE AND CONCENTRATION (PPM) (3)																				
	E-1 (1)	E-2	E-3	E-4	T-1 (2)	T-2	T-3	T-5	T-10	T-11	T-12	T-13	T-14	T-16	T-17	T-18	T-19	T-20	T-21	T-23	T-24
PCBs																					
Arochlor 1242	--	58	248	1	200	0.27	(4) ND(0.1)	ND	3.1	ND(0.1)	4.3	2.3	30	13	15	1.7	ND(0.1)	ND	ND	ND	ND
Arochlor 1248	29	--	--	--	ND	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	11	ND	ND
Arochlor 1260	--	--	--	--	ND	ND	ND	ND	3.3	ND	ND	ND	ND	ND	ND	1.8	ND	ND	ND	0.6	0.11
POLYAROMATIC HYDROCARBONS																					
Naphthalene	--	--	--	--	--	--	ND(0.1)	--	--	--	--	--	--	2.2	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	ND(0.02)	--	--	--	--	--	--	1.4	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	0.035	--	--	--	--	--	--	4.5	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	ND(0.004)	--	--	--	--	--	--	0.24	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	ND(0.01)	--	--	--	--	--	--	1.2	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	ND(0.02)	--	--	--	--	--	--	1.5	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--	ND(0.01)	--	--	--	--	--	--	0.53	--	--	--	--	--	--	--

(1) Samples designated with a "E-" prefix were collected from the underground tank excavation on September 18, 1986.
(2) Samples designated with a "T-" prefix were collected from test pits excavated on October 28 and November 4, 1986.
(3) Only those constituents detected in at least one of the samples are listed herein. PPM = Parts Per Million.
(4) ND = Not detected (detection limit, if available, in parentheses). -- = Not analyzed.

All of the samples contained detectable concentrations of PCBs. The highest concentration (248 mg/kg PCB-1242) was found in Sample E-3 collected at a depth of three feet below ground surface. Sample E-3 contained 1,100 mg/kg lead which exceeded the TTLC for that metal (1,000 mg/kg).

2.3.5 Phase IV

Source: Dames & Moore; Report, Additional Site Investigation, Walker Properties site, November 14, 1986

11/86 D&M

Date of Sampling: October, 1986

Purpose of Samples: The purpose of these samples was to evaluate the vertical and horizontal extent of contamination in the area surrounding the underground tank excavation and the aboveground tank containment areas.
Location of Samples: Several test pits were excavated to evaluate the vertical and lateral extent of visually stained soil. The test pit locations are shown on Figure 2.4.

Analytical Results: Seventeen soil samples collected from these pits were analyzed by California Analytical Laboratories for CAM metals and PCBs. Two of the samples were also analyzed for polynuclear aromatic hydrocarbons (PNAs) by EPA Method 8310. The laboratory results are summarized on Table 2.3.

PNA

14 of 17 !

Fourteen of the samples showed detectable concentrations of PCBs. Of these, two had concentrations of PCBs greater than the TTLC of 50 mg/kg. The concentrations of lead and copper in these two samples also were greater than the TTLCs.

Pb, Cu

Up to 4.5 mg/kg phenathrene (along with lower concentrations of other PNAs) were detected in one of the two samples analyzed for polynuclear aromatics.

PNA

The other sample contained only 0.035 mg/kg phenathrene, the only PNA detected in this sample.

EMCON

2.3.6 Phase V

Source: EMCON Associates; Results of Soil Sampling at the Walker Properties Site, Santa Fe Springs, California, August 2, 1988.

8/88 EMCON

Date of Sampling: July 7, 1988

Purpose of Sampling: These samples were collected as part of the scoping process for the development of this RI/FS Workplan. The purpose of these samples was to confirm Dames & Moore's findings that the eastern portion of the site does not contain significant contamination and that site conditions had not changed since 1986.

11 Borings to 5'

Location of Samples: Eleven borings to a depth of five feet were drilled on the eastern portion of the property. Two additional borings were drilled in an empty field located along Bloomfield Avenue. The sampling locations are shown as Borings B-1 through B-13 on Figure 2.5.

Cu?, PNAs?, 8270?

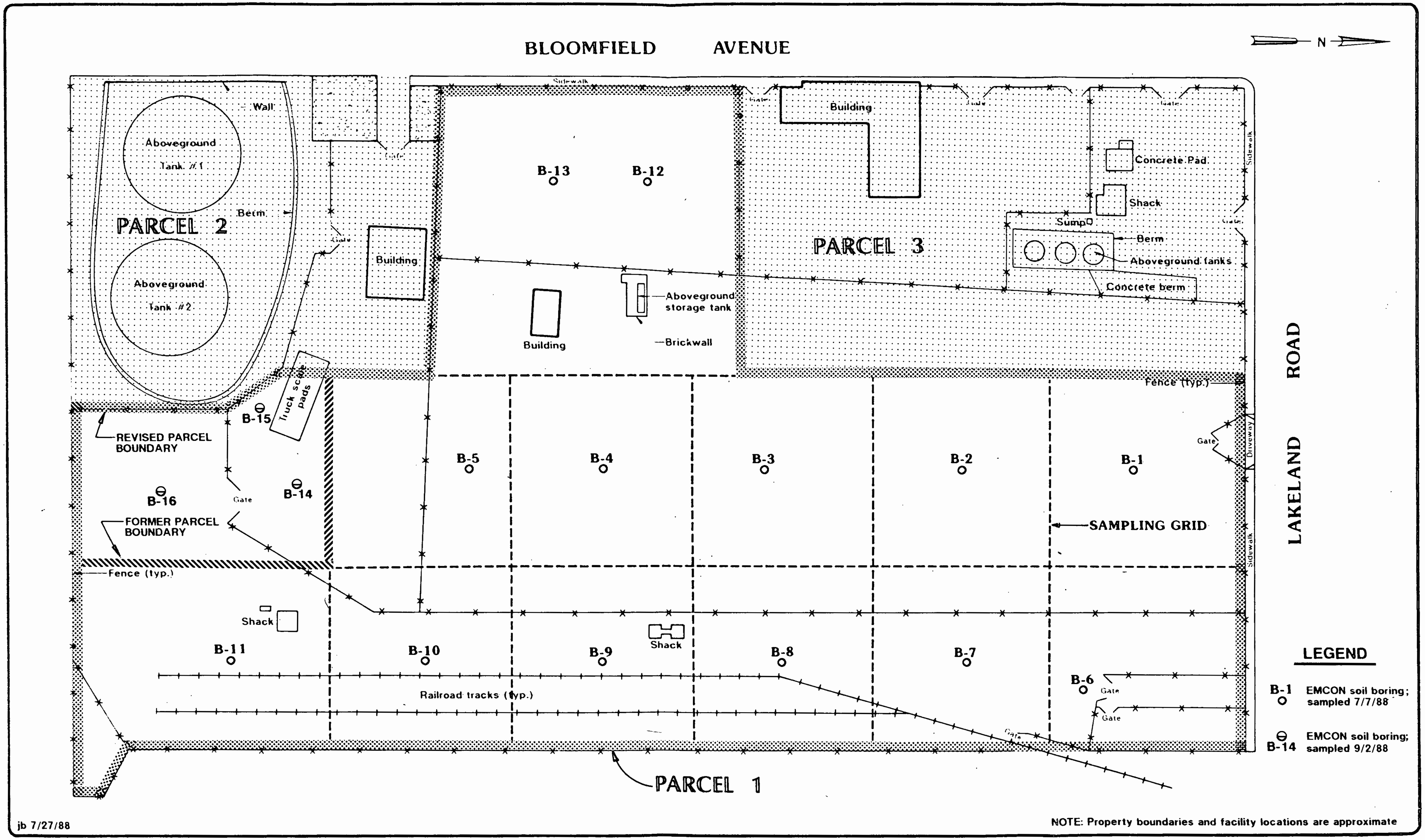
Analytical Results: Thirteen samples (one from each boring) were analyzed by Truesdail Laboratories in Tustin, California for volatile organics (EPA Method 8240), PCBs and pesticides (EPA Method 8080), barium (EPA Method 7080) and lead (EPA Method 7420). No volatile organics, pesticides or PCBs were detected in any of the samples. The highest concentrations of lead and barium were 84.9 mg/kg and 640 mg/kg, respectively. These concentrations are below the TTLCs for these metals. The sample containing the highest concentration of lead was further analyzed by the Waste Extraction Test as specified in the California Code of Regulations, Title 22. Only 2.9 mg/L soluble lead was found. This concentration is below the STLC of 5.0 mg/L for this metal. The analytical results are summarized on Table 2.4.

analytes 8240 8080 Ba Pb

what about Cu 8270 metals.

un modified??

11/149



EMCON Associates

0 100 200 300 Feet

SCALE

WALKER PROPERTIES

SANTA FE SPRINGS, CALIFORNIA

EMCON ASSOCIATES SAMPLING LOCATIONS

FIGURE 2.5

PROJECT NO. B15-01.01

TABLE 2.4

SUMMARY OF ANALYTICAL RESULTS FOR SOIL SAMPLES
COLLECTED BY EMCON ASSOCIATES (PARCEL 1)

Boring No.	Depth (feet)	Barium (mg/kg)	Lead (mg/kg)
B-1	5	137	12.6
B-2	5	169	14.5
B-3	5	123	12.5
B-4	5	120	11.5
B-5	5	91.3	13.8
B-6	5	96.7	17.9
B-7	5	108	12
B-8	5	63.9	9.5
B-9	5	47.1	8.9
B-10	5	640 most*	most 84.9 **
B-11	5	321	32.0
B-12	5	107	10.4
B-13	5	126	16.6
B-14	5	208	6.2
B-15	5 former Parcel 2	118	2.2
B-16	5	293	11.2

References: EMCON Associates; Results of Soil Sampling at the Walker Properties Site, Santa Fe Springs, California, August 2, 1988.

EMCON Associates; Supplement to Certification Form for Walker Properties Site, Parcel 1, September 21, 1988.

2.3.7 Phase VA

Source: EMCON Associates; Supplement to Certification Form for Walker Properties Site, Parcel 1, September 21, 1988.

9/88

Date of Sampling: September 2, 1988

Purpose of Sampling: The purpose of these samples was to evaluate the potential for hazardous substances in the soil in a small portion of the property which was previously included in Parcel 2.

3 borings to 5'

Location of Samples: Three additional borings to a depth of five feet were hand-augered near the southern end of the property. The sampling locations are shown as Borings B-14 through B-16 on Figure 2.5.

Analytical Results: The three soil samples (one from each boring) were analyzed by Truesdail Laboratories for volatile organics (EPA Method 8240), PCBs and pesticides (EPA Method 8080), barium (EPA Method 7080) and lead (EPA Method 7420). No volatile organics, pesticides or PCBs were detected in any of the samples. The highest concentrations of lead and barium were 11.2 mg/kg and 293 mg/kg, respectively. These concentrations are less than the TTLC and less than ten times the STLC for these metals. The analytial results are summarized on Table 2.4.

analytes

3.0 CONTAMINANT ASSESSMENT

3.1 Description of Known and Potential Contamination

Based on the previous investigations described in Chapter 2, the known and potential areas of contamination have been identified. These areas are shown on Figure ~~3.1.~~

Disagree on Parcel 3 (Stack) & Parcel 2 (Used

The areas of known contamination appear to be confined to the north-western corner of the property (Parcel 3). Soil samples collected from this area have been found to contain up to 248 mg/kg PCBs. Lower concentrations of polynuclear aromatics (up to 4.5 mg/kg phenanthrene) were also found in samples taken from this area. Portions of Parcel 3 have been marked on Figure 3.1 as "Known Contamination".

8 AG Tanks

No samples have been collected in the vicinity of eight above ground tanks (date removed ~~unknown~~) formerly located on Parcel 3. Furthermore, ~~surface soil stains~~ are visible in other areas of the parcel. Therefore, these portions of the Parcel 3 have been marked as "Potential Contamination".

not tested?
see table 2-1

No volatile aromatics, volatile halogenated organics, PCBs or pesticides were detected in samples collected from borings drilled at angles beneath the two large above ground tanks on Parcel 2. However, it is not possible to conclusively state that there have been no releases from these tanks based solely on this evidence. A more through investigation of this area may be performed only after the tanks have been removed. Therefore, a portion of Parcel 2 has been classified as an area of "Potential Contamination".

Parcel 1 has been sampled by Dames & Moore and EMCON and has been found not to be significantly affected by releases of hazardous substances. Therefore, no further action is required for this parcel.

? TCE, PCE, BTX

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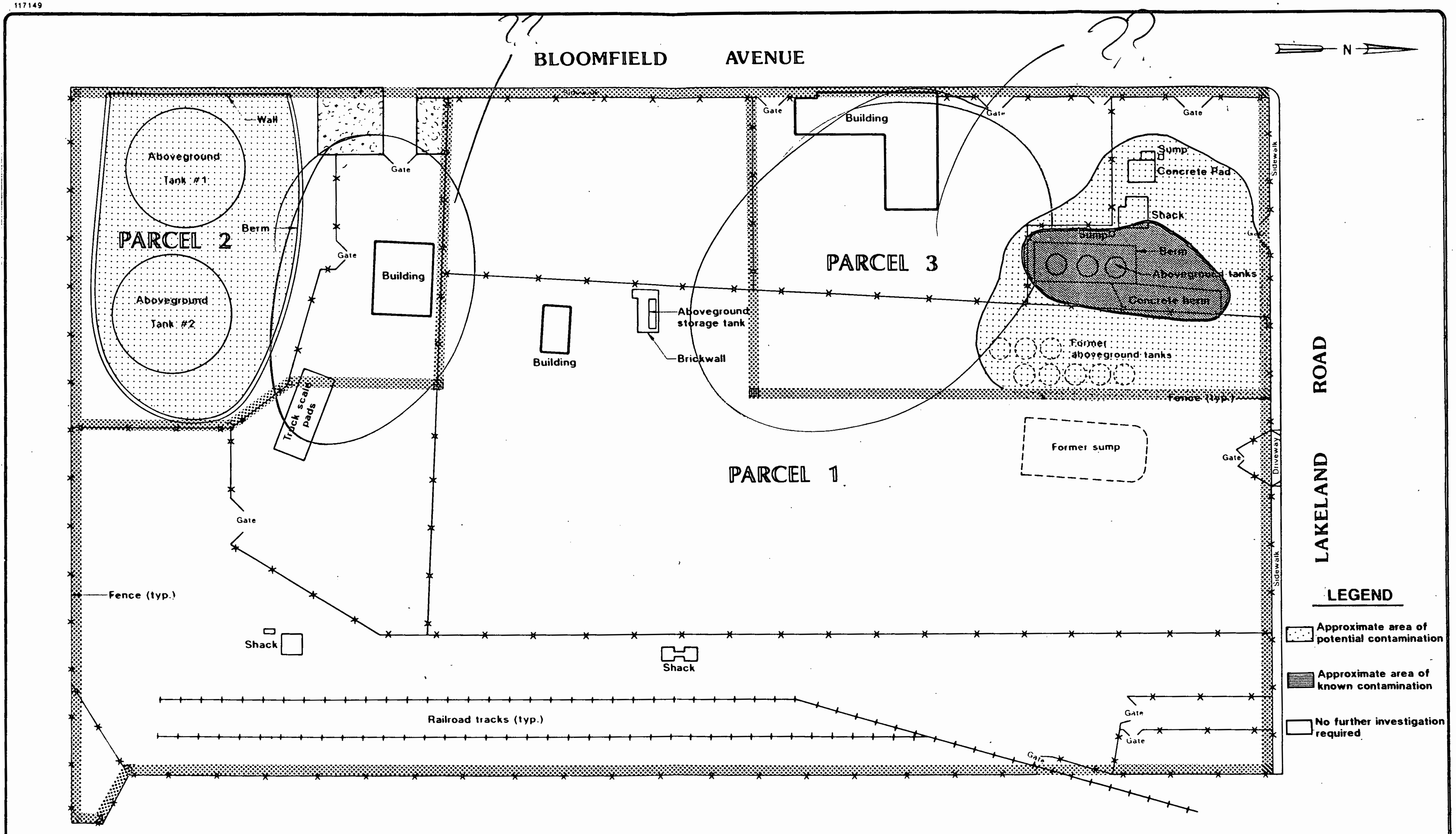

NOTE: Property boundaries and facility locations are approximate

jb 7/27/88

EMCON Associates

0 100 200 300 Feet

SCALE

WALKER PROPERTIES

SANTA FE SPRINGS, CALIFORNIA

AREAS OF KNOWN AND POTENTIAL CONTAMINATION

FIGURE 3.1

PROJECT NO. B15-01.01

The details for further evaluating the presence of hazardous substances on Parcels 2 and 3 of the Walker Properties site are provided in Chapter 4.

3.2 POTENTIAL PATHWAYS FOR CONTAMINANT MIGRATION AND POTENTIAL RECEPTORS

solvents?!

The information presented in Chapter 2 and summarized in Section 3.1, above, indicates that PCBs, along with waste oil, have been released on Parcel 3. There is also a possibility that hydrocarbons may have been released from the two large tanks on Parcel 2.

The PCBs found on Parcel 3 can potentially migrate from the site via soil, surface water, air or groundwater. The most likely pathway for this contaminant migration is via dust from contaminated soil. According to the U.S. EPA in their April 2, 1987 policy regarding PCB spill cleanup, the principal route of exposure to PCBs in soil is through the inhalation route. Other less likely exposure routes due to contaminated soil may be ingestion (typically by children) or dermal exposures.

Another pathway of concern includes the movement of contaminated soil via surface water runoff. Transport processes could then move the contaminated soil to locations where human exposure could possibly occur.

Despite their low vapor pressure, at significant concentrations, PCBs can volatilize into the atmosphere. Due to the relatively low concentrations found at the Walker Properties site, this pathway is not considered highly likely.

Contaminant migration of PCBs via groundwater is also unlikely. In a May 1986 U.S. EPA document regarding PCB cleanup levels, it was stated that major groundwater contamination by PCBs has rarely been reported. Furthermore, if a PCB contaminated site lies above an unsaturated zone, soil through which surface infiltration must migrate to reach groundwater will adsorb PCBs and will greatly retard PCB migration. The maximum depth of PCB contaminated soil in Parcel 3 of the Walker Properties site is thought to be less than 15 feet, and the minimum depth to groundwater, as discussed in Section 3.4, is approximately 85 to 100 feet below ground surface. Therefore, the separation between the contaminants and groundwater is expected to be at least 70 feet and groundwater is not expected to be affected by PCBs. what about volatiles

based on what? samples?

GW 85-100'?

Table 3.1 summarizes the potential migration pathways for PCBs and the potential routes of migration.

Sec. 3.4.2 says 50'??

It is not known if there have been releases of hydrocarbons from the two large above ground tanks on Parcel 2. Tank No. 1 reportedly held crude oil and Tank No. 2 is thought to have contained jet fuel. The dates of use of these tanks could not be determined by the information reviewed. If there have been releases from these tanks, petroleum hydrocarbon contamination may have migrated through the soil to the groundwater. If the tanks are removed and the soil beneath them is found to be contaminated, there may be releases of volatile hydrocarbons to the air.

Boring 1
4 composites
.2% TOC, @ 25-40'

3.3 POTENTIAL RECEPTORS

The Walker Properties site is located in an industrial area which is adjacent to residential areas. The nearest residential development is approximately one-half mile from the site. Approximately 120 employees and 780 patients currently reside at the Metropolitan State Hospital, located about 1,000 feet west of the site. The populations living at the hospital or in the residential developments could possibly be exposed via dust emissions from the site.

Residence

TABLE 3.1

POTENTIAL MIGRATION PATHWAYS
FOR PCBs AT WALKER PROPERTIES SITE

Pathway	Migration Mode	Human Exposure Route
Soils	• Fugitive dust • Surface water runoff	Ingestion, inhalation and dermal
Surface Water	• Surface water runoff	Ingestion and dermal
Air	• Fugitive dust	Ingestion, inhalation and dermal
Groundwater	• Movement of dissolved contaminants	Ingestion

According to the DHS Hazard Ranking System Worksheet (dated June, 1987), the nearest water supply well (State Well No. 3S/11W-3D3: Santa Fe Well No. 4) is located approximately 1.25 miles northwest of the site. Groundwater from this well and others in Santa Fe Springs are blended with water from the Metropolitan Water District to supply approximately 10,000 residents and 100,000 workers in the area. Humans could possibly be exposed to contaminants via ingestion or dermal absorption of affected groundwater.

GW.

Confirm direction & gradient?

Other potential biological receptors include humans or animals who come into contact with contaminated surface soils (although the site is fenced to prevent this). The potential for exposure will be further evaluated throughout the RI/FS process.

3.4 SITE GEOLOGY/HYDROGEOLOGY

GEO..

The geologic setting of the Walker Properties site will affect the potential migration of contaminants. Therefore, the following discussion of the site geology and hydrogeology is a fundamental element of the RI/FS Workplan.

The general hydrogeologic characteristics in the area were derived from the State of California Department of Water Resources (DWR) Bulletin No. 104 published in 1961. Additional information was obtained from IT Corporation's January 1986 report for Powerine Oil entitled "Investigation and Site Assessment for Subsurface Contamination"; from James M. Montgomery's Workplan for a Remedial Investigation/Feasibility Study at the Neville Chemical Company Site, Santa Fe Springs, California dated September, 1987; and from Dames & Moore's Draft Report, Subsurface Investigation, Former Getty Property, July 1, 1985.

3.4.1 Regional Geology

The project site is located on the Santa Fe Springs Plain which is one of the major landforms which comprise the Coastal Plain of Los Angeles

County. The Santa Fe Springs Plain dips gently both to the northeast toward Whittier and to the southeast toward the Downey Plain.

The surface of the Coastal Plain is underlain by three broad categories of rock: crystalline basement rock, consolidated sedimentary rocks and more recently deposited alluvial and marine sediments. These recently deposited sediments (called the San Pedro and Lakewood formations) contain the principal regional aquifers in the area.

3.4.2 Hydrogeology

Hydrog

The major water-bearing unit of interest to this investigation is the upper aquifer unit of the Lakewood Formation called the Exposition Aquifer. Regional information provided in DWR's Bulletin 104 indicates that the Exposition Aquifer lies at depths between approximately 50 and 100 feet below the site. The Exposition Aquifer is characterized by interbedded sand and gravel with discontinuous clay and silt lenses.

?? pg 3-4 says 85' ??

During previous investigations performed by Dames & Moore at the Walker Properties site, silt and sand were encountered to the 70 foot maximum depth of the explorations. No groundwater was encountered during Dames & Moore's drilling activities.

site specific!

At the Powerine Oil Refinery (located approximately 100 feet northwest of the Walker Properties site), IT Corporation encountered an upper unit consisting of silty clay and clayey silt. This upper unit ranged in thickness from 4 feet to 16 feet. Approximately 50 to 70 feet of sands with minor, discontinuous lenses of gravels, silts and clays were encountered beneath the upper unit. A silty clay was found underlying the middle, sandy unit.

same site ??

IT Corporation encountered groundwater in all deep borings at the Powerine Oil Refinery at depths ranging from 85 to 95 feet below the ground surface. The hydraulic gradient for this site was calculated to be about 0.0085 ft/ft, with the groundwater flow direction to the

GW

southwest. Floating hydrocarbons (up to 1.9 feet) were found in monitoring wells ~~installed on the~~ refinery property. The January 1988 Fourth Quarter Monitoring Report stated that up to 13,000 ppb benzene were found in Powerine's Monitoring Well MW502 located on the south side of their property.

Where is this in rel to Kalbers?

4.0 WORKPLAN

4.1 INTRODUCTION

The information provided in this chapter describes in detail the tasks intended to be conducted in order to perform the RI/FS at the Walker Properties site. The remedial investigation portion of this workplan is designed to collect the necessary data to characterize the nature and extent of contamination, and to describe the characteristics of any potential pathways of contaminant migration and potential biological receptors. The feasibility study portion of this workplan is intended to identify and evaluate appropriate response measures designed to prevent future migration of contaminants from the Walker Properties site.

This chapter of the RI/FS Workplan has been divided into four major sections, each addressing a separate physical element of the site. The first three elements are the three distinct parcels into which the property has been divided (Figure 4.1). These parcels roughly correspond to areas of known and potential contamination as discussed in Chapter 3. The fourth element to be addressed by this workplan is groundwater. The investigation of groundwater is conditional upon the findings of the soil investigation conducted on the three parcels.

A soil gas survey is being performed at the Walker Properties site as part of the post-remedial action development plans. This study, being performed by GeoScience Analytical, will address the issue of hydrocarbon vapors in the vadose zone beneath the site.

4.2 PARCEL 1

PARCEL 1

As discussed in Chapter 2, several investigations were performed by Dames & Moore in 1985 and 1986 to assess the potential for contamination on Parcel 1. The results of their work were submitted for

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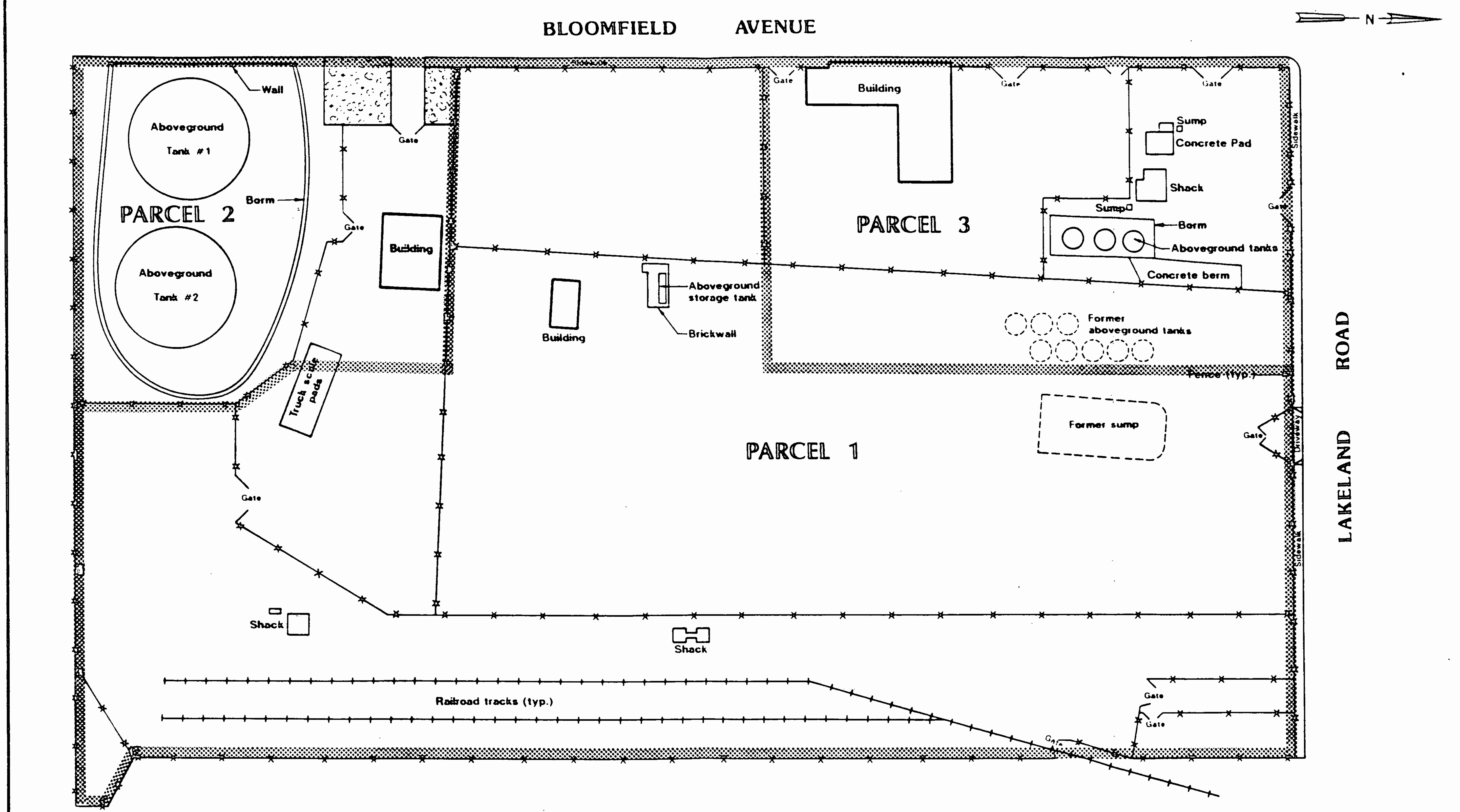

NOTE: Property boundaries and facility locations are approximate

jb 7/27/88

EMCON Associates

0 100 200 300 Feet

SCALE

WALKER PROPERTIES

SANTA FE SPRINGS, CALIFORNIA

SITE PLAN

FIGURE 4.1

PROJECT NO. B15-01.01

Parcel 1

evaluation by the California Department of Health Services (DHS). DHS reviewed the work and wrote a letter to the City of Santa Fe Springs stating that the mitigation measures such as capping the site to prevent infiltration of surface water did not appear necessary. To confirm the results of Dames & Moore's studies and to determine if the condition of Parcel 1 had changed since 1986, EMCON Associates resampled this portion of the property in July and September 1988. No volatile organics, pesticides nor PCBs were detected in any of the samples. Lead and barium were detected, but at relatively low concentrations. Based on these results, EMCON prepared a report dated August 2, 1988, ~~followed by a supplemental~~ report dated September 21, 1988 which recommended eliminating Parcel 1 from further investigation. These reports, including copies of the certified analytical results, are on file with the DHS; the County of Los Angeles Department of Health Services; and the City of Santa Fe Springs.

SDH letter?

Not Rou?

No further investigation of Parcel 1 will be performed during the RI/FS.

?

4.3 PARCEL 2

Parcel 2

As discussed in Chapter 2, there are two large above ground tanks located in the southwest corner of the property (Parcel 2 - see Figure 4.1). Reportedly, Tank No. 1 held crude oil and Tank No. 2 held jet fuel. Tank No. 1 currently contains approximately four inches of residual materials (crude oil) and Tank No. 2 is completely empty.

Dames & Moore drilled a boring under each of these tanks in 1985. No volatile halogenated organics, volatile aromatics, pesticides, or PCBs were detected in the samples analyzed from these borings. However, because of the large diameter of the tanks, it was impossible to drill directly beneath them to determine if there had been any releases. Dames & Moore concluded that a more thorough investigation could only be performed following the demolition of the two large tanks and removal of their concrete pads.

not tested

Parcel 2

The approach for investigating the potential for contamination at Parcel 2 involves three major tasks: (1) decontamination (if necessary) and demolition of each tank, (2) demolition and removal of the concrete pads, and (3) visual inspection and sampling of underlying soil. The following sections provide the details for implementing each of these tasks. A summary of proposed sampling locations and analytical parameters is provided in Table 6.1, Chapter 6 (Quality Assurance Project Plan).

4.3.1 Decontamination and Demolition of Tanks

Above ground Tank No. 2 is empty and no residual material remains inside. However, Tank No. 1 and its associated piping must be decontaminated prior to demolition. ~~The crude oil~~ in the bottom of the tank will be removed and either disposed of as hazardous waste or sold to a refinery for processing. The inside of the tank will be cleaned and visually inspected. The waste cleaning material must be containerized and disposed of in the same manner as the tank material. The volume of waste generated while cleaning the tanks will be kept to a minimum.

?

After Tank No. 1 has been cleaned, both tanks and their associated piping will be dismantled and removed from the site to be sold for salvage. Once the above ground tanks have been removed, the underlying concrete slabs will be broken up and removed for disposal.

4.3.2 Inspection and Sampling Stockpiled Soil

Following the demolition and removal of the tanks and concrete pads, the underlying soil will be visually inspected for signs of contamination. Areas with stained soil will be scraped to a depth not exceeding two feet. The scraped soil will be stockpiled on plastic sheeting or in drums. Two samples from the stockpiled soil will be collected using a hand-driven core sampler equipped with brass rings. The samples will be sealed with Teflon tape and plastic caps, labeled, and transmitted on ice to a State-certified laboratory for analysis of

Parcel 2

total petroleum hydrocarbons (TPH) by Modified U.S. EPA Method 8015 or 418.1. The analytical results from these samples will be used to determine the proper disposal of the stockpiled soil.

TPH ?
418.1 or 8015

4.3.3 Soil Sampling

After the soil under the tanks has been scraped (if visible contamination is present), soil borings are proposed to be drilled in the area. The proposed location of these exploratory borings are shown on Figure 4.2.

borings

Borings 3 X 50' ?

Up to three borings will be drilled to a maximum depth of 50 feet using continuous-flight, eight or ten-inch diameter hollow-stem auger drilling equipment. Drill cuttings will be stored on site in 55-gallon drums until analytical results of samples collected from the exploratory borings are available to determine proper disposal. The boreholes will be backfilled with cement grout. Augers will be steam cleaned prior to the drilling of each boring to prevent cross-contamination. Soil samples for logging and analysis will be collected at 5-foot depth intervals by advancing a California modified split-spoon sampler equipped with brass or stainless steel liners into the undisturbed soil beyond the tip of the augers.

When the sample ring is brought to the surface, the ends will be sealed in place with Teflon liners followed by plastic end caps. The caps will be taped in place and the sample rings will be labeled, sealed in a plastic "ziplock" storage bag and placed in an ice chest with ice. Field screening may be performed to select samples for laboratory analysis using a portable infrared spectrometer. Up to four discrete samples per boring will be transmitted in the ice chests to a State-certified laboratory. Samples collected beneath Tank No. 1 will be analyzed for total petroleum hydrocarbons (TPH) by U.S. EPA Method 418.1, and samples collected beneath Tank No. 2 will be analyzed for TPH by U.S. EPA Method 8015.

PCB

max 4 sample per boring

Crude

get fuel ?

TPH only ?

for fuel ??

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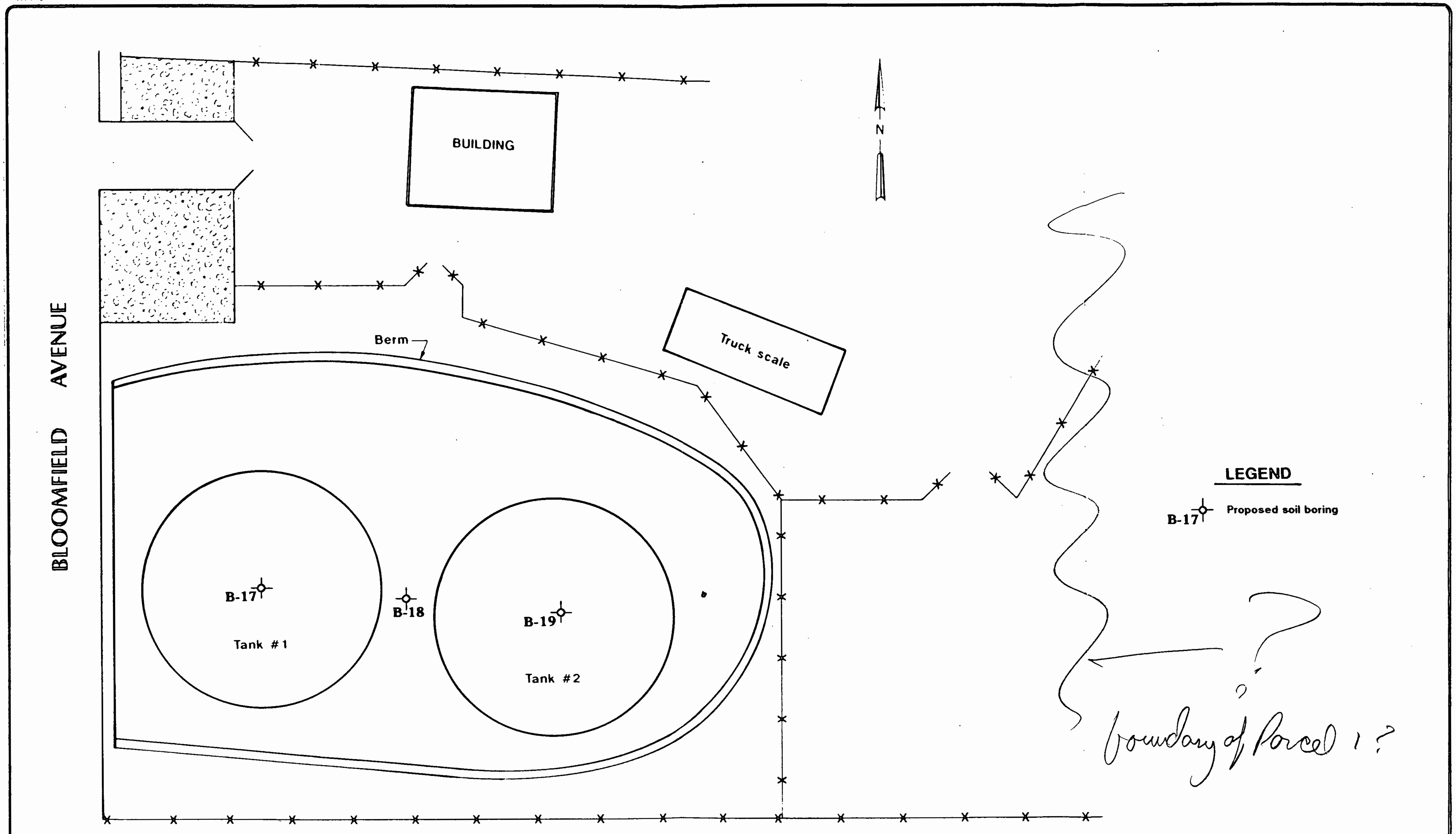

jb 8/19 88

NOTE: Property boundaries and facility locations are approximate

EMCON Associates

0 50 100 150 200 Feet
SCALE

WALKER PROPERTIES
SANTA FE SPRINGS, CALIFORNIA

DETAIL OF PARCEL 2

FIGURE 4.2

PROJECT NO. B15-01.01

Samples not submitted for chemical analysis will be checked with a photoionization detector and lithologically described using the Unified Soil Classification System (USCS). The information will be recorded on the field log boring sheet. The work will be supervised by a California registered geologist or professional engineer.

Air monitoring during drilling and sampling will be conducted as described in the Health and Safety Plan, Chapter 7.

4.3.4 Discussion of Sampling Results

? what is "acceptable"

If the soil samples collected from the exploratory borings drilled in Parcel 2 show acceptable concentrations of TPH, no further assessment of this parcel will be necessary. Furthermore, an investigation of the impacts of these tanks on groundwater would not be necessary. Therefore, with agency concurrence, Section 4.5, below, would not be implemented.

If the soil samples sampled collected from Parcel 2 contain elevated concentrations of TPH, further investigation (such as drilling additional or deeper borings) would be warranted. If this is required, a supplemental workplan would be developed and submitted to the agencies for approval.

What other? RWQCB?

4.3.5 Feasibility Study Workplan for Parcel 2

FS X

It is unknown if releases from the tanks located on Parcel 2 of the Walker Properties site have affected soil at the site. If the investigation of this parcel is performed and contamination is encountered, a feasibility study will be performed to evaluate and select an appropriate response.

The following tasks outline the principal components of the Feasibility Study for any contaminated soil encountered on Parcel 2.

TASK 1 - Identify General Response Actions

A range of possible general response actions will be developed, based on reviewing the data collected during the subsurface soil investigation. Responses for soil contamination at Parcel 2 of the Walker Properties site may include the following:

- No action
- Excavation and on-site treatment
- In-situ treatment
- Excavation and off-site disposal and/or treatment

TASK 2 - Identify Remedial Action Technologies

Under this task, the various technologies which may be used to remediate soil contamination at Parcel 2 will be identified and reviewed briefly for suitability to address the specific conditions at the Walker Properties site.

TASK 3 - Develop Remedial Action Alternatives

Detailed alternatives will be developed under this task by combining the suitable technologies identified in Task 2, above.

TASK 4 - Conduct Initial Screening of Alternative Actions

The purpose of this task is to eliminate those technologies which are not technically feasible or appropriate, prior to conducting detailed evaluations of the remaining alternatives.

TASK 5 - Pilot or Bench-Scale Studies (Optional)

If necessary, pilot studies may be performed to verify the effectiveness of proposed technologies. For example, if in-situ biological treatment is identified as a potential alternative, laboratory studies may be required to evaluate the treatability of the contaminants found in the soil.

TASK 6 - Detailed Evaluation

The initial screening of alternative actions identified in Task 4, above, will produce a number of remedial actions which must be evaluated in detail to identify the most appropriate alternative. The following factors will be considered:

- Technical analysis (performance, reliability, implementability and safety)
- Environmental analysis (assessment of environmental damage or enhancement)
- Public health analysis
- Institutional analysis (evaluation of compliance with local, State or Federal regulations)
- Detailed cost analysis

4.4 PARCEL 3

Parcel 3

Parcel 3 (shown in detail on Figure 4.3) is the location of Lakewood Oil Service, Inc.'s (Lakewood) former operations. As presented in Chapter 2, Lakewood reportedly used the northern part of the parcel from the 1960's to the early 1980's as a waste oil transfer facility. It is thought that while Lakewood was operating on the parcel, waste oil was released from various above ground storage tanks. This oil is suspected to be the source of PCBs found in soil samples collected at the site by Dames & Moore in 1985 and 1986.

A four-phase approach will be employed to address the contamination issues at Parcel 3. These phases are: (1) demolition and removal of above grade structures, (2) removal of two underground sumps,

per Co Eng?

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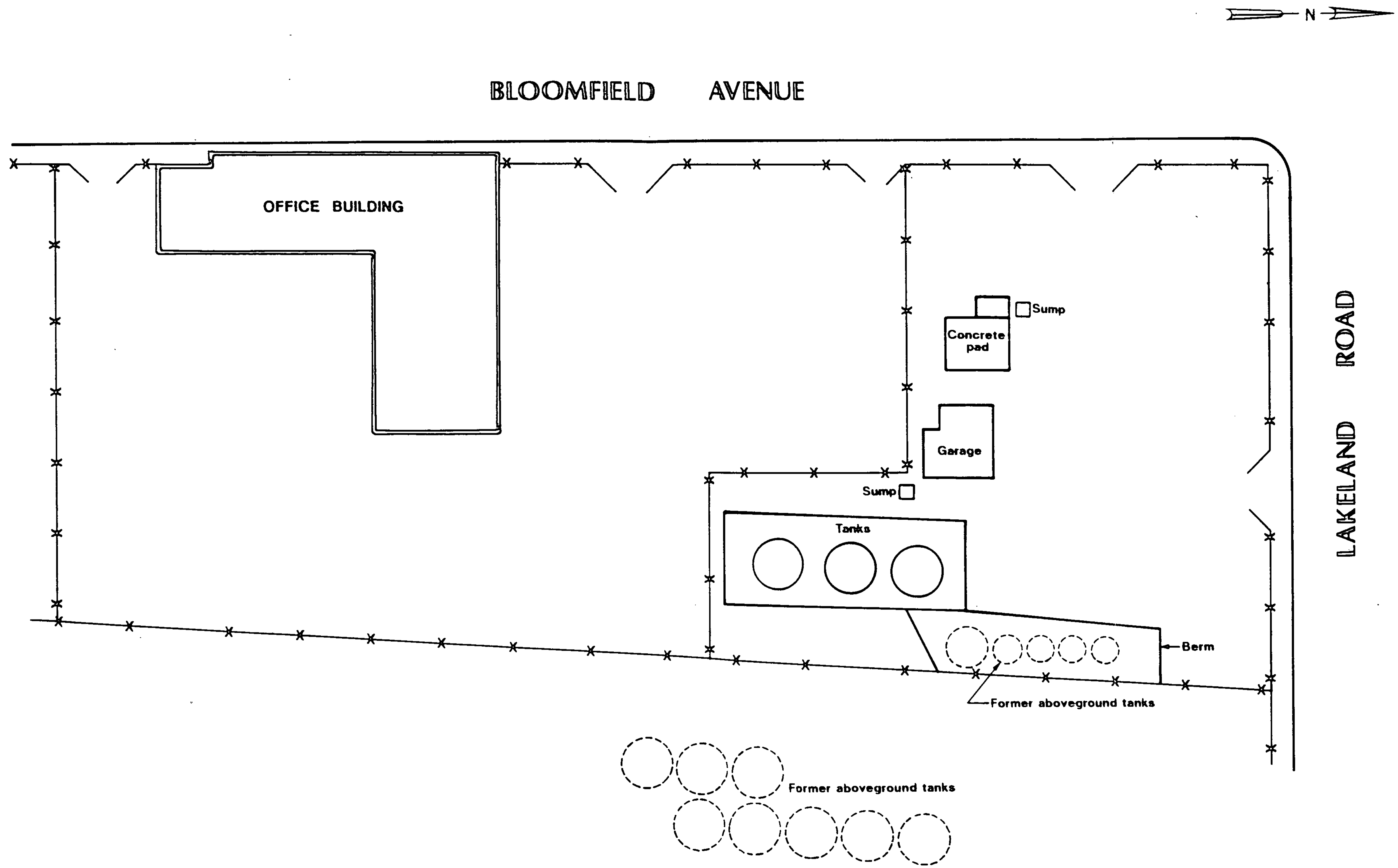

NOTE: Property boundaries and facility locations are approximate

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EMCON Associates

0 50 100 150 200 Feet

SCALE

WALKER PROPERTIES
SANTA FE SPRINGS, CALIFORNIA

DETAIL OF PARCEL 3

FIGURE 4.3

PROJECT NO. B15-01.01

(3) excavation and removal of visibly oily soil and (4) subsurface soil sampling.

4.4.1 Demolition and Removal of Above Grade Structures

To facilitate the investigation of contaminated soil on Parcel 3, the above grade structures located in and around the area of known contamination (see Figure 3.1 in Chapter 3) will be demolished and removed from the site. These structures include the garage, concrete berm, and the three above ground tanks shown on Figure 4.3. Prior to demolition, the wooden garage structure will be examined for visible oily stains. If present, any oil-stained wood will be disposed of as a hazardous waste. The above ground tanks will be removed following the procedures outlined in Section 4.4.1.1.

AGT

4.4.1.1 Demolition of Three Above Ground Tanks

The three above ground tanks and associated piping must be removed from Parcel 3 to adequately evaluate the condition of soil beneath them. Removal of these facilities will involve

- sampling and analysis of any residual materials contained in the tanks and associated piping
- evaluating and selecting the proper disposal options for this material based on the laboratory results and estimated volume
- removal and proper disposal of the residual material
- dismantlement and removal of above ground tanks and piping
- proper disposal of tanks and piping

An experienced and licensed contractor will perform the necessary work pursuant to local permitting requirements. The details for each of these steps are provided below.

Sampling and Analysis

To evaluate disposal options for the structures and any residual materials contained within the tanks, one sample (if material is present) will be collected from each of the three tanks. The sampling method depends upon the consistency of any material found within the tanks. If the material is a solid ~~or~~ sludge, a stainless steel scoop or trowel will be used to collect a sample from beneath the surface of the material. The sample will be placed in a clean glass sample jar which will be sealed and labeled. If the residual material is a liquid, a dipper or weighted sample bottle will be used for collection of the material. Liquid samples will be placed in glass jars, then sealed and labeled. Samples will be stored on ice and submitted to a State-certified laboratory (along with chain-of-custody records) for analysis of PCBs by U.S. EPA Method 8080.

PCB only?

Evaluation and Selection of Disposal Option

Based on the analytical results of samples taken from the residual materials within the tanks, disposal options will be evaluated. If no PCBs are present, it may be possible to transport the residual material to a petroleum recycler for processing. If PCBs are present, the residual material must be managed as a hazardous waste.

Dismantlement and Removal of Above Ground Tanks and Piping

The three tanks and connecting pipes will be dismantled by unbolting the metal sheets and lowering them to the ground for removal. This work will be performed in a manner consistent with the Health and Safety Plan (Chapter 7) by an experienced and licensed contractor.

Disposal of Tanks and Piping

< 5 ppm PCB = non-Haz

If chemical testing of the residual material inside the tanks indicates that they contain less than 5 mg/kg of PCBs, the tanks may be cleaned and disposed of as a nonhazardous waste. Any cleaning liquid generated will be containerized on site for proper disposal. If the analytical results show that the tanks held material with concentrations of PCBs greater than 5 ppm, the tanks will be manifested and transported to a properly permitted facility as a hazardous waste. > 5ppm = HAZ

4.4.2 Removal of Underground Sumps

PCB Engineer Sumps ?!

Prior to removal of the underground sumps, samples of the sump material will be collected and submitted for analysis of PCBs by U.S. EPA Method 608. ~~If the material contains less than 5 mg/kg of PCBs, it~~ will be pumped from the sump and taken to a waste oil processing facility. If greater than 5 ppm PCBs are detected, the material will be disposed of as a hazardous waste at a properly permitted facility. In addition, before removal of the sumps begins, permits will be obtained from the Los Angeles County Department of Public Works and the County inspector will be notified at least three days prior to the removal of the sumps.

? 8080 ?

Pub Wks

Following the removal of the sump contents, the structures will be excavated using front end loaders equipped with backhoes or other appropriate excavation equipment. After the sumps and any visibly oily soil beneath them have been excavated, at least two samples beneath each sump will be obtained by driving a sample ring into freshly removed material from the backhoe bucket. Personnel will not be allowed to enter the excavation to collect samples. The soil samples collected from the sump excavations will be labeled, sealed in plastic "ziplock" bags and stored on ice for transmittal to the State-certified laboratory. The samples will be analyzed for PCBs by U.S. EPA Method 8080 and for total petroleum hydrocarbons (TPH) by U.S. EPA Method 418.1. Any soil or concrete removed or excavated during the removal of the sumps will be stockpiled on site and managed in the same manner as the soil excavated from beneath the three above ground tanks (Section 4.4.3).

analytes TPH | PCB 418.1

4.4.3 Excavation and Removal of Visibly Oily Soil

In 1986, Dames & Moore analyzed over 21 soil samples collected near the three above ground tanks on Parcel 3. The results of their testing (included in their November 1986 report) indicated that PCBs were found in soil samples that were visibly oily. No PCBs were detected in any of the samples that were visibly "clean". The approximate boundaries of the visibly oily soil as determined by Dames & Moore are shown on Figure 4.4. The vertical extent of contamination could not be determined until soil beneath the tanks was sampled and analyzed. To accomplish this, the tanks will be removed (Section 4.4.2), along with the visibly contaminated soil, and soil samples will be collected for laboratory analysis of PCBs.

4.4.3.1 Feasibility Study for Remedial Action Alternatives for PCB Contaminated Soil

<u>Summary of Issues</u>

The issues considered in determining the appropriate approaches to remediate PCB contaminated oily soils at the Walker Properties site include the following items:

- Public health concerns
- Environmental concerns
- Technical concerns
- Regulatory concerns
- Institutional barriers
- Concerns of the prospective buyer, including development schedules
- Cost concerns

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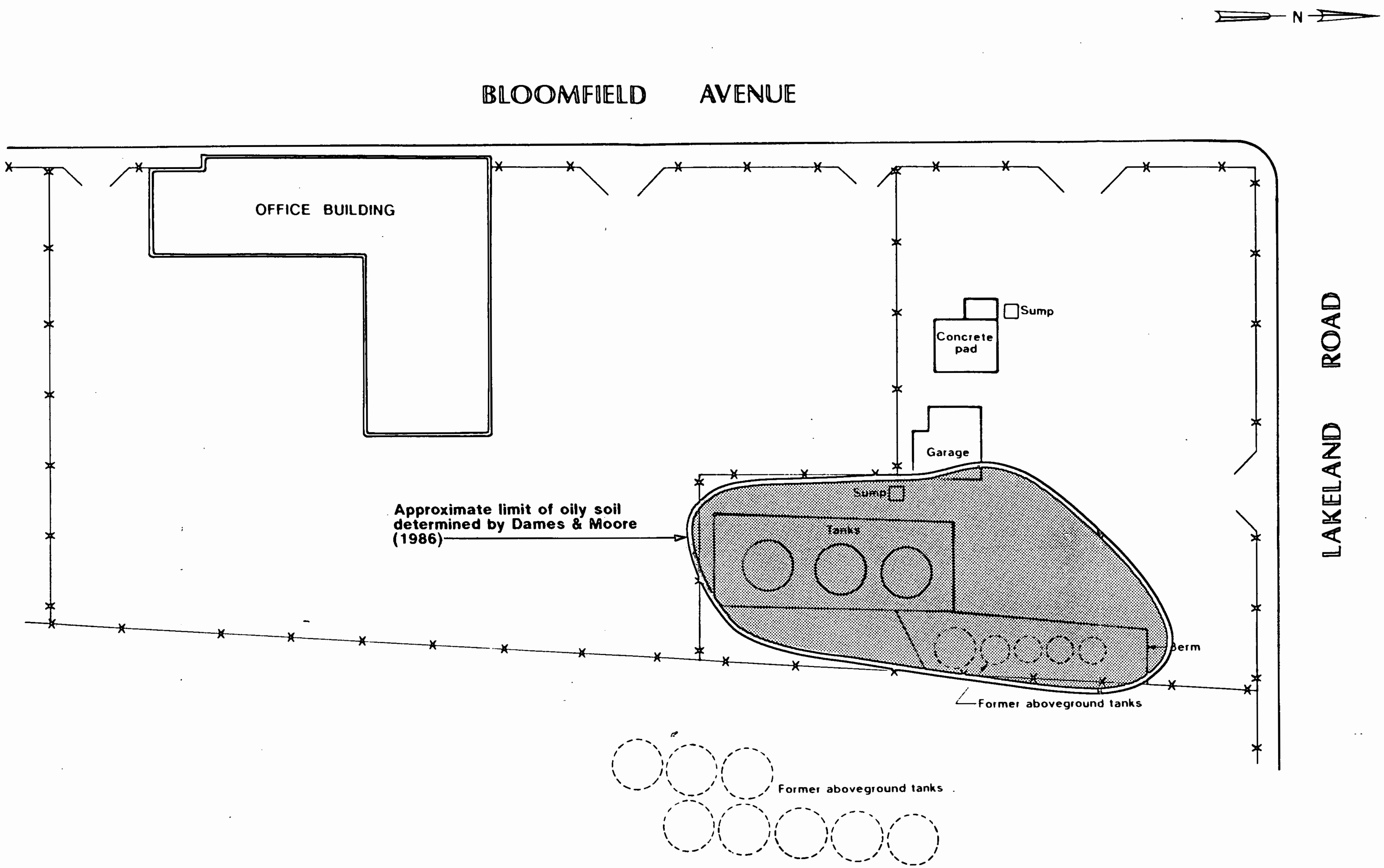

NOTE: Property boundaries and facility locations are approximate

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EMCON Associates

0 50 100 150 200 Feet
SCALE

WALKER PROPERTIES
SANTA FE SPRINGS, CALIFORNIA

PARCEL 3 - AREA OF KNOWN CONTAMINATION

FIGURE 4.4
PROJECT NO. B15-01.01

TABLE 4.1
TRADE OFF MATRIX FOR PCB CONTAMINATED OILY SOILS

Option No.	Remedial Alternatives	Special Costs for Environmental Issues (x $1000)	Public Health Risks	Environmental Concerns	Economic and Technical Considerations	Probable Regulatory Concerns	Institutional (Public) Barriers	Seller/Buyer Concerns
1	No soil removal or treatment	---	No immediate risk	No immediate risk	---	- Not acceptable to regulatory agencies - Deed notice would be required	Not acceptable to local community	- May limit future land use - Not acceptable to buyer
2	Excavation of contaminated soil followed by on-site chemical treatment (ozonation) of excavated soil	4,100	No known risks	No known risks	Question of effectiveness	- Question of effectiveness - Possible deed notice - Requires SCAQMD permit - May require permit/ variance from CA DHS	May not be acceptable to local community	- Treatment system will interfere with or prevent development of site - May result in long time delays - May limit future land use - High cost
3	In-situ biological treatment	110	No known risks	No known risks	- Non-uniform distribution of treatment solution - Possible plugging of soils - May introduce water to a zone which presently has no water - Question of effectiveness for PCBs	- Question of effectiveness - Possible deed notice - May require permit/ variance from CA DHS	May not be acceptable to local community	- May result in long time delays - May limit future land use
4	Excavation of contaminated soil followed by on-site biological treatment	180	No known risks	No known risks	Question of effectiveness for PCBs	- Question of effectiveness - Possible deed notice - Requires SCAQMD permit - May require permit/ variance from CA DHS	May not be acceptable to local community	- Treatment system will interfere with or prevent development of site - May result in long time delays - May limit future land use
5	Excavation of contaminated soil followed by on-site thermal (Shirco/infrared) treatment	1,500	No known risks	No known risks	- Cost/benefit ratio justified by risk reduction	- Question of effectiveness by state agencies - Demonstrated effective by U.S. EPA SITE program - Requires SCAQMD permit - May require permit/ variance from CA DHS	Not acceptable to local community	- Site cannot be developed until treatment is complete - May result in long time delays - High cost
6	Excavation of contaminated soil with off-site disposal	1,700 - 2,200	Transportation risks	No known risks	- Proven effectiveness	- Acceptable - should be concerned with overfilling limited landfill volume - Requires SCAQMD permit	Acceptable	- High cost - Compatible with escrow deadlines - Development could occur after contaminated soil is removed
7	Excavation of contaminated soil with off-site thermal (incineration) treatment	4,900	Transportation risks	No known risks	- Proven effectiveness	- Acceptable - Requires SCAQMD permit - No off-site incinerators permitted in California	Acceptable	- High cost - Compatible with escrow deadlines - Development could occur after contaminated soil is removed

PCB Contaminated Oily Soils

PCB contaminated oily soils are thought to be confined to the area of known contamination shown on Figure 4.4. In its present state, the oily soil does not appear to present an immediate threat to public health or the environment because:

- The waste oil in soil is very old and as a consequence its vapor pressure is likely to be very low. Therefore, no exposure to hydrocarbon vapors is expected.
- PCB contamination in the oily soil is thought to be highly localized.
- Particulate generation from the oily soil is expected to be very low due to the dust suppressing qualities of oil.
- Oily soil was not found at depths greater than nine feet below surface grade. Perched groundwater was not encountered in this area at these depths. The depth to groundwater in the area is expected to be over 85 feet below the ground surface. ? gw > 85'

Identification of Alternative Remedial Actions for PCB Contaminated Oily Soil

Several alternative approaches for remediating PCB contaminated oily soil in Parcel 3 are shown in Table 4.1 and are identified below:

- Option 1 - No soil removal or treatment
- Option 2 - Excavation and chemical (ozonation) treatment of soils on site.
- Option 3 - In-situ biological treatment
- Option 4 - Excavation and on-site biological treatment
- Option 5 - Excavation and on-site thermal (Shirco/Infrared) treatment
- Option 6 - Excavation and off-site disposal at an approved hazardous waste disposal facility
- Option 7 - Excavation and off-site thermal (incineration) treatment at an off-site treatment facility

Based on the evaluation of these alternatives presented above, only Options 6 and 7 present acceptable solutions for site cleanup. dispose.

Discussion of Alternative Remedial Actions

Option 1

The no soil removal or treatment option is not a reasonable alternative since the contamination assessment, presented in Chapter 3, indicates that there are potential pathways of exposure to PCB contaminated soil through inhalation of air born particulates, and dermal exposure or ingestion of soils and particulates. This alternative would interfere with site development and cause the placement of a notice in the deed to warn future owners and occupants of the land of the presence of PCB containing hazardous waste.

Option 2

In this option, the excavation of oily soil would be followed by on-site chemical treatment using ozonation (or its variants: peroxide and ultra violet light with ozone). Ozonation is an evolving treatment process pioneered in Europe for water and wastewater treatment. The process uses reactive oxygen radicals to break down hydrocarbons in soil. The process is non-specific and non-selective in that all soil hydrocarbons, not just PCBs and waste oil, will be attacked. The advantage is that soil is treated on site and therefore the need for off-site disposal of contaminated soils is eliminated.

This option would not result in significant public health or environmental risks. However, there is a question of effectiveness since these methods are non-specific for hydrocarbons degradation, would not reduce hydrocarbon levels to below ambient concentrations (e.g., several thousand mg/kg) and has not been proven effective against PCBs. Furthermore, this alternative may interfere with planned development of Parcel 3 because of permitting issues and site specific research and development issues. Because of these issues and the uncertainties involved, this method is not recommended.

Options 3 and 4

Options 3 and 4 involve the use of biodegradation to achieve site cleanup. Biodegradation is a recent adaptation of naturally occurring treatment processes. The current adaptations allow soils to be treated in-situ or on site, therefore possibly eliminating off-site disposal at approved facilities. Biodegradation is a viable alternative for the treatment of hydrocarbon contaminated soil, but its effectiveness in treating PCBs has not been convincingly demonstrated outside the laboratory.

In-situ biodegradation requires the installation of a recharge trench (or system of recharge wells) and downgradient recovery wells. Nutrients, emulsifiers, oxygen, and possibly adapted bacteria to supplement native strains are also needed. The proper balance of hydrocarbons, nutrients, oxygen, bacteria, pH and temperature is needed to obtain optimum biodegradation rates. Biodegradation of hydrocarbons in-situ may be effective in removing contaminants in soil, if soil permeability is sufficiently uniform to prevent channeling of nutrient solutions past some of the contaminated soils. Uniform distribution of nutrients and bacteria may be difficult to achieve in soil. Possible plugging of well screens in soil may occur, and clay matrix soils may be delaminated by the inappropriate use of nutrients. Treatment time for in-situ biodegradation may last 12 to 18 months. Limited development of this portion of the site could co-exist with in-situ biological treatment provided soil were not excavated or compacted in the process.

Use of on-site biological treatment of excavated soils would allow for the best distribution of nutrients, oxygen and bacteria. Several alternatives exist including traditional landfarming and wind rows to the more modern solid phase bioreactors. Total treatment time would be eight weeks to six months depending on the biological treatment alternative selected. Approximately four acres of land would be needed for this alternative.

With the exception of the no soil removal or treatment option, these alternatives are the lowest cost options available for site cleanup resulting in no significant public health or environmental risks. Problems associated with the use of these methods (including soil clogging, plugging of well screens, poor liquid distribution, clay delamenation, etc.) are sometimes due to the inexperience of the remedial action team rather than a failure of the treatment system. These methods have been used to cleanup waste oil and fuel contaminated sites since the mid-1970's, including a demonstration in the U.S. EPA Superfund Innovative Technology Evaluation (SITE) Program. However, there is a question of their effectiveness in completely degrading PCBs under environmental conditions. In addition, time delays resulting from treatability studies, permit acquisition and the possibility of a deed notice requirement make these options not desirable.

Option 5

Option 5 involves the excavation of contaminated soil followed by on-site thermal (infrared) treatment. This technology has recently been demonstrated in the U.S. EPA SITE Program as a cost effective method for destroying organic hazardous waste including PCBs. The Shirco Infrared Process has reported Destruction and Removal Efficiencies (DRE) for PCBs in excess of eight 9's (e.g., 99.9999999% DRE) during the SITE Program demonstration. The California Department of Health Services (DHS) is currently evaluating this technology for use in the state.

The advantages of this technology are that it offers the best overall cost to risk benefit ratio of all technologies available because it offers DRE for organic hazardous waste in excess of regulatory requirements. It is cost competitive with more conventional alternative technologies or off-site disposal because it does not require off-site transport and disposal of hazardous constituents. In a practical sense the major disadvantages of this process are that it has not been evaluated and accepted by the state, and that it would require an extensive permitting process in an area of the state known for its stiff regulatory and public opposition to thermal treatment processes.

This option is mid-range in cost, would not result in significant public health or environmental risks and is the only technology presented in which the cost/benefit ratio is justified by a risk reduction brought on by the total destruction of the waste and lack of transportation risks. The method has been demonstrated effective in the U.S. EPA SITE Program, but the California DHS has not completed its evaluation of this technology for use in California. An additional drawback would be a protracted permitting process in an area of the state known for its resistance to thermal waste treatment projects. Because of these uncertainties this option is not recommended.

Options 6 and 7

Options 6 and 7 involve the excavation of contaminated soils with off-site disposal or thermal treatment. These alternatives are accepted in California by both the public and regulatory agencies. Although the California DHS encourages the use of alternative technologies to off-site transport and disposal, none exist within the state. Options 6 and 7 would result in cleanup levels equivalent to those obtained with Option 5. The extra costs must be evaluated with respect to transportation risks associated with these options.

Approximately 4,000 to 6,000 cubic yards of soil would require excavation, transport and disposal or thermal treatment at a suitable waste treatment/disposal facility. Excavation and off-site transport of PCB contaminated oily soils would require approximately four weeks. Approximately 25 trucks per day would be leaving the site thus increasing the risk of accidents during transportation. However, this option is known to be effective and acceptable to the public and regulatory agencies. Also, no protracted permitting process would be required. Therefore, either Option 6 or 7 is recommended.

4.4.3.2 Excavation Management Plan

Visibly oily soils will be excavated using front end loaders equipped with backhoes, scrapers or other appropriate equipment. Approximately 5,000 cubic yards of soil are expected to be excavated. Excavated material will be either loaded directly into transport trucks, or stockpiled on plastic sheeting in Exclusion Zone 2 (shown on Figure 7.2) and covered with plastic sheeting to prevent blowing of material. Not more than 400 cubic yards of soil will be stockpiled at any time. dust

During excavation, watering for dust control will be performed, if necessary to prevent fugitive dust. A water truck or hose will be used to wet the work area, particularly where trucks and heavy equipment are operated.

Excavation will not be conducted between the hours of 7:00 p.m. and 6:00 a.m. A permit to excavate may be required by the South Coast Air Quality Management District.

Front end loaders and backhoes will be used to load the soil onto trucks. When the transport vehicles have been loaded, no material will extend above the sides or rear of the truck. Each vehicle will be weighed on a portable truck scale mounted on a steel plate. If the weight of the truck exceeds the California load capacity restrictions, material will be removed from the trucks with a backhoe and returned to the stockpile. If the weight is below the legal capacity, small increments of soil will be added to the load until the legal capacity is nearly achieved. At no time will trucks carrying loads which exceed the legal capacity be allowed to leave the site.

Backhoes, loaders or other heavy equipment which comes in contact with contaminated soil will be decontaminated before it leaves the site. Decontamination of this equipment will involve brushing and scraping loose material from the vehicles, then using a low volume, high pressure steam cleaner to remove the remaining material. Any liquids generated during decontamination activities will be containerized and tested to determine proper disposal.

PID! HNU?

Air monitoring during excavation will be performed using a hand-held photoionization detector (PID). Periodically, the PID probe will be placed up to three inches away from the excavated surface. If the PID registers over 50 ppm when the vapors are measured at this distance, the SCAQMD will be notified at (818)572-6306.

AQMD Rule 1166

During excavation activities, ambient air will be monitored at the down wind perimeter of the exclusion zone using a photoionization detector. Appropriate responses for various action levels are provided below:

PID Reading (PPM)	Action Taken
50	• Notify SCAQMD Enforcement Coordinator
100	• Curtail or mitigate activity causing problem
200	• Halt activity, cover excavation. Do not resume activity until ambient air levels have returned to background levels.

Wind speed and direction will be monitored during excavation activities. Excavation will not be conducted on days when the average wind speed over 15 minutes is greater than 15 miles per hour (mph) or the instantaneous wind speed exceeds 35 mph.

The excavation contractor will comply with the Health and Safety Plan (Chapter 7) included in this Workplan, and with Article 6, Title 8, California Code of Regulations. H&S

4.4.4 Transportation Plan

Loading

The stockpiled material will be loaded by front end loader or by backhoe into lined transport trucks and/or lined roll-off bins. The lining operation will take place prior to the trucks entering the truck loading area.

When loading is completed, the plastic lining will be folded over the soil prior to tarping. The loaded vehicles will be covered with tarps to prevent dust or materials from falling out enroute to the disposal facility. Transport trucks will remain on designated routes on the property to prevent coming into contact with potentially contaminated soil. Therefore, decontamination of the trucks will not be required.

Transportation Permits and Manifests

A licensed hazardous waste hauler will transport the excavated material to a Class I disposal facility. The material is expected to be disposed of at the Kettleman Hill facility operated by Chemical Waste Management, Inc. in Kings County.

All vehicles used to transport solid hazardous waste from the Walker Properties site will have current EPA identification number and will be registered by the California Department of Health Services and/or the California Highway Patrol.

Drivers will carry their Class II drivers' licenses and certificates of physical examination. All drivers will keep a daily log in which they record their hours of service in accordance with the Department of Transportation (DOT) requirements.

A signed, Uniform Hazardous Waste Manifest will be completed for each load. The Site Manager will document the date, time, weight and manifest number of each load before it leaves the site. The drivers involved in the transportation of hazardous waste from the site will be responsible for checking each manifest to make sure the generator portion has been filled out correctly. They will also complete all relevant items in the transportation portion of the manifest.

Transportation Route

The anticipated disposal facility for the PCB contaminated soil is the Kettleman Hills facility located about 40 miles north of Bakersfield in Kings County, California. The proposed transportation route is described below:

- Walker Properties site to Interstate 5 (I-5):

  Turn left on Bloomfield and proceed to Imperial Highway. Turn right at Imperial Highway. Proceed approximately 0.9 miles and enter I-5 (north) toward Los Angeles, (Figure 4.5),

- To Kettleman Hills Disposal Site:

  As shown on Figure 4.5, proceed north on I-5 approximately 180 miles to U.S. 41. Proceed west on U.S. 41 to Kettleman Hills facility (Figure 4.6).

Emergency Procedures During Transportation

The contractor selected for hauling the PCB waste from the Walker Properties site will provide each driver with a respirator, protective

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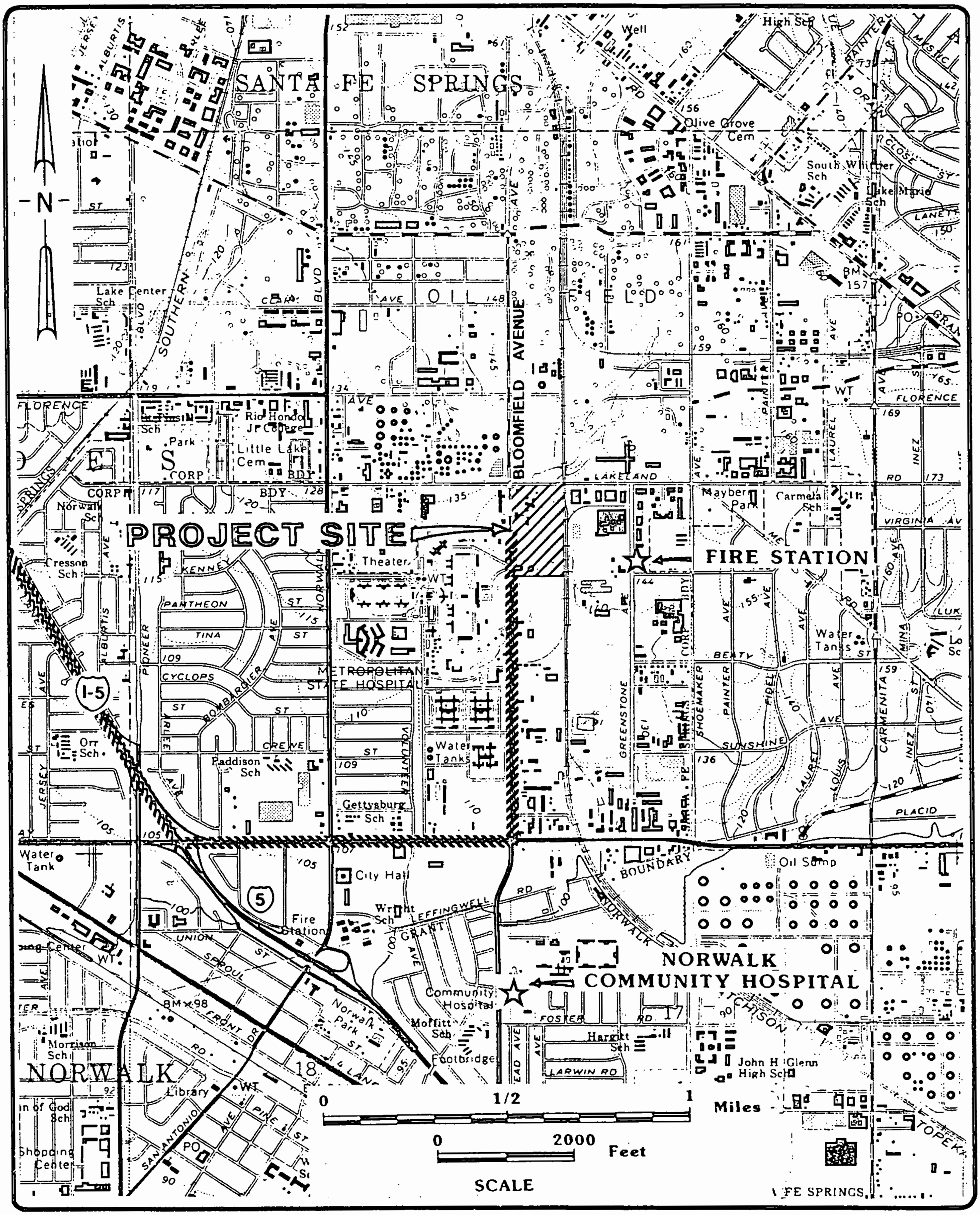

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WALKER PROPERTIES
11102 BLOOMFIELD AVE.
SANTA FE SPRINGS, CALIFORNIA

ROUTE FROM WALKER PROPERTIES SITE TO I-5

FIGURE 4.5

PROJECT NO. B15-01.01

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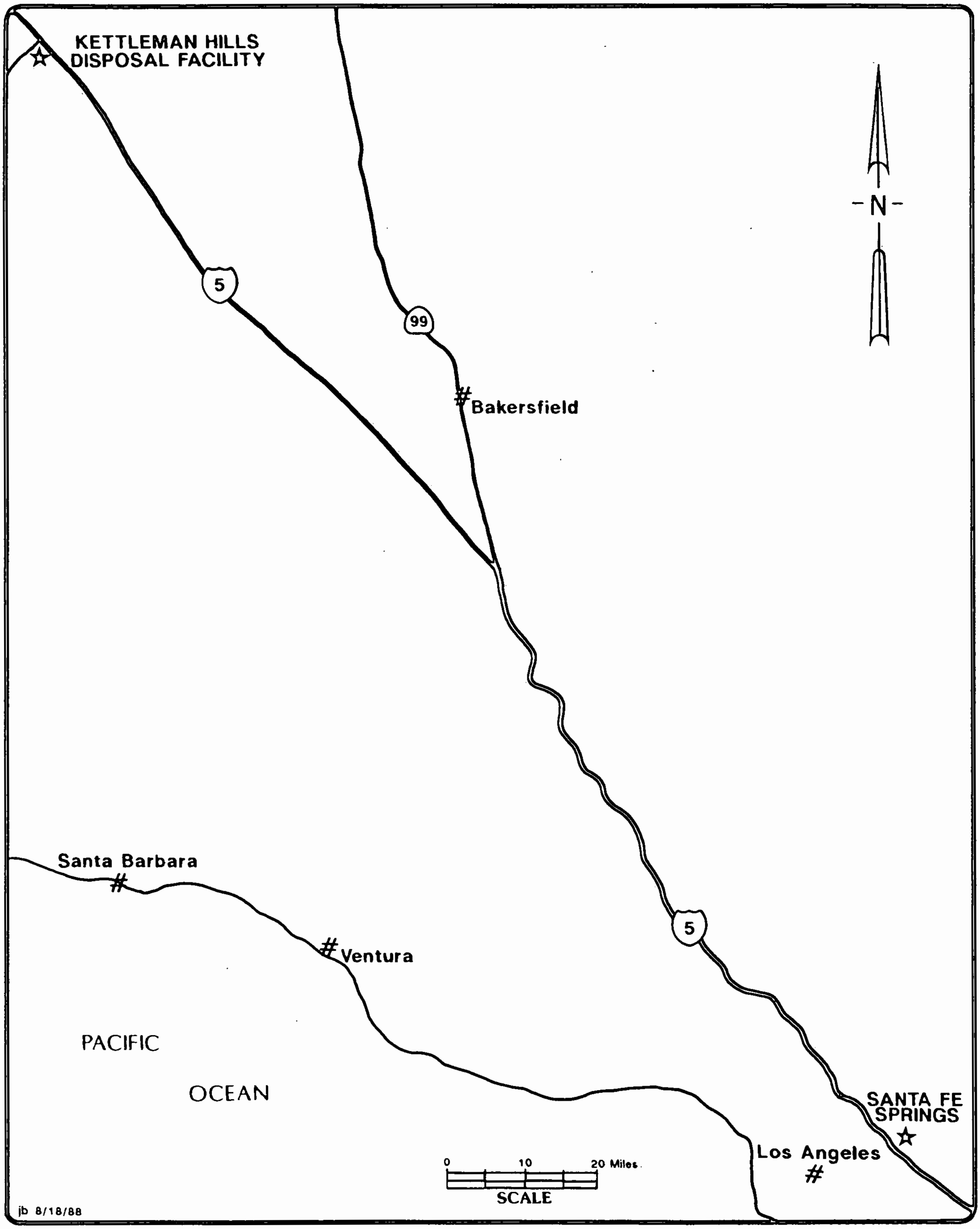

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WALKER PROPERTIES

SANTA FE SPRINGS, CALIFORNIA

ROUTE FROM SANTA FE SPRINGS TO KETTLEMAN HILLS

FIGURE 4.6

PROJECT NO. B15-01.01

clothing, a fire extinguisher, shovels and brooms to be carried within the truck. In the event of an enroute accident with the potential to spill hazardous waste, drivers will take the following actions:

- Get off road to a safe area, if possible
- Turn on hazard flashers
- Notify contractor's dispatch office
- Stay up-wind and control ignition sources
- Keep bystanders away
- Stay on scene until relieved

The contractor's dispatch office will be responsible for notification of State and Federal agencies and of EMCON Associates in the event of any emergency.

4.4.5 Sampling Plan

Sampling

Following the removal of visibly oily soil from Parcel 3, the underlying soil will be sampled and analyzed to evaluate the condition of soil beneath the tanks. In addition, at least four soil samples will be collected in the area of the eight former above ground tanks which were located approximately 75 feet east of the three above ground tanks, and four soil samples will be obtained from the southern portion of Parcel 3 in the area of Mr. George Walker's former business operations. The details for the soil sampling are described below.

What analyte ???

same?

<u>Post-Excavation Sampling Beneath Three Above Ground Tanks</u>

Post excav. Sample

The post-excavation sampling plan was developed following the procedures outlined in a 1985 U.S. EPA report entitled "Verification of PCB Spill Cleanup by Sampling and Analysis". This document includes step-by-step guidance for preparing the sample design; collecting, handling, and preserving the samples taken; and compositing samples.

The sample design is based on a hexagonal grid of 37 sample points (Figure 4.7). This grid design was laid out within a sample circle centered on the contaminated area. Preparation of the sampling design included the following steps:

1. Draw a scale diagram of the cleanup area.

2. Find the center and radius of the sampling circle.

3. Determine the number of grid sample points to use.

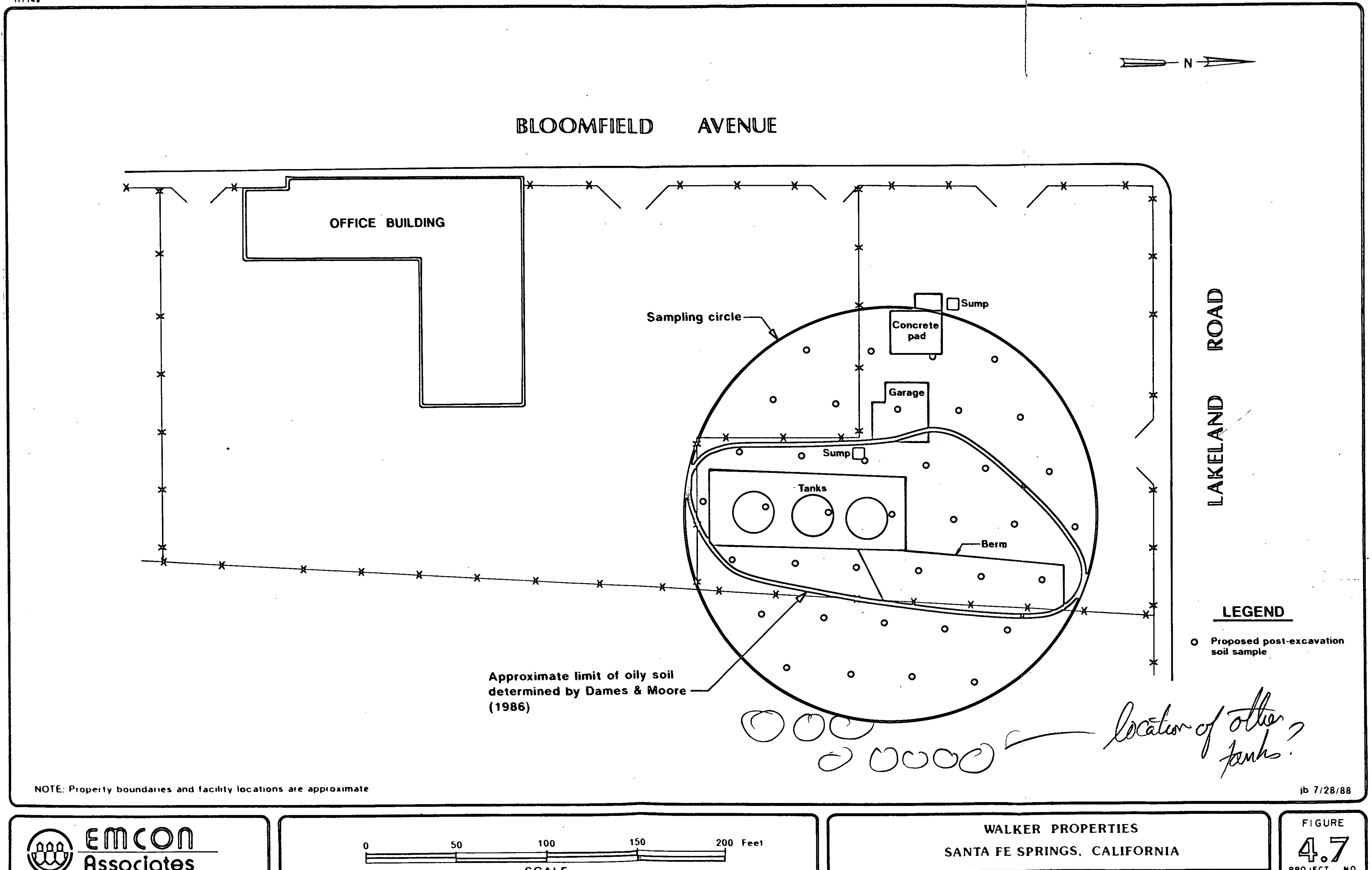
4. Lay out the sampling points on the diagram constructed in Step 1.

The radius of the sampling circle was graphically determined to be 115 feet. Using the table provided in the EPA report, the required number of grid samples (based on the radius of the sampling circle) is 37. The distance "s" between adjacent points and the distance "u" between successive rows were determined by the following formulas, as specified in the EPA report:

$s = 0.30r$, where	s = distance between adjacent points r = radius of sampling circle
$u = 0.26r$, where	u = distance between successive rows of the design r = radius of sampling circle

For the 115 foot sampling radius at the Walker Properties site, the distance "s" between sampling points was calculated to be 34.5 feet. The distance "u" between rows was calculated to be approximately 30 feet.

Samples from the bottom of the excavation will be collected at the designated locations by scraping the soil with a stainless steel trowel or spatula to yield about 100 grams of soil. The soil sample will be



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SANTA FE SPRINGS, CALIFORNIA

PARCEL 3 - PROPOSED POST-EXCAVATION SAMPLING LOCATIONS

FIGURE 4.7

PROJECT NO. B15-01.01

placed in a clean glass bottle, the bottom capped and sealed with tape and labeled. The sample bottle will be placed in a "ziplock" plastic bag and placed in an ice chest with ice for transmittal to a State-certified laboratory for analysis along with chain-of-custody records. To prevent cross-contamination between samples, the sample trowel or spatula will be cleaned in detergent and rinsed with deionized water. Furthermore, a clean pair of gloves will be worn to collect each sample.

?? EnW tanks?? AG TANKS

Former Above Ground Tank Location

No soil samples have been collected in the area of Parcel 3 where eight above ground tanks ~~were~~ located prior to 1967. The former contents of these tanks are not known. Therefore, EMCON proposes to drill and sample two exploratory soil borings in this area. The proposed boring locations are shown on Figure 4.8. B21, B-22 5, 10' 8240/8270

The two borings will be drilled using eight or ten-inch diameter hollow-stem auger drilling equipment to a maximum depth of ten feet below ground surface. Samples for lithologic description and chemical analysis will be collected at depths of five feet and ten feet. The drilling and sampling procedures are the same as those discussed in Section 4.3.3 for Parcel 2.

Because the former contents of the removed tanks are not known, a general screening for volatile and semi-volatile chemicals will be conducted. Up to four soil samples from these two borings will be analyzed for volatile and semi-volatile organics by U.S. EPA Methods 8240 and 8270 and for lead and barium by U.S. EPA Methods 7420 and 7080, respectively. VOCP

Southern Portion of Parcel 3

No soil samples have been collected or analyzed in the area of Mr. Walker's former business operations, located in the southern

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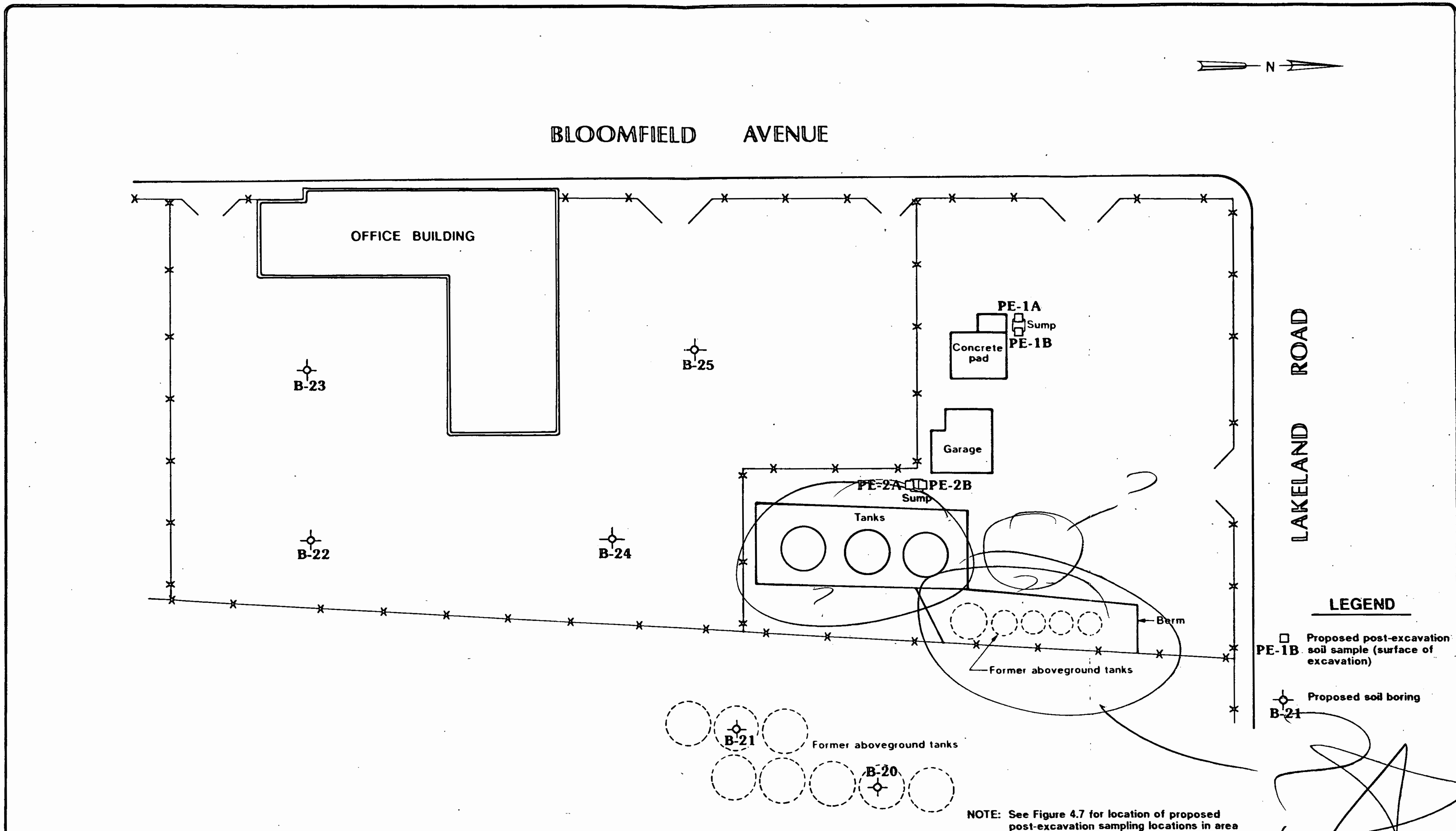

NOTE: See Figure 4.7 for location of proposed post-excavation sampling locations in area of known contamination

NOTE: Property boundaries and facility locations are approximate

jb 7/28/88

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0 50 100 150 200 Feet

SCALE

WALKER PROPERTIES

SANTA FE SPRINGS, CALIFORNIA

PROPOSED SAMPLING LOCATIONS

FIGURE 4.8

PROJECT NO. B15-01.01

!?

portion of Parcel 3. Therefore, to evaluate the condition of soil in this area, up to four shallow soil borings are proposed to be drilled and sampled to a maximum depth of ten feet below ground surface. Samples for lithologic description and chemical analysis will be collected at depths of five and ten feet. The drilling and sampling procedures are the same as those described in Section 4.3.3 for Parcel 2. The proposed soil borings locations for this portion of Parcel 3 are shown as on Figure 4.8.

48 to 10' D

5 & 10'

???

near surface?

?

analytes

418.1

Soil samples from these borings will be analyzed for total petroleum hydrocarbons by U.S. EPA Method 418.1. If the TPH concentrations in any of these samples exceed 100 mg/kg, the sample will be further analyzed for PCBs by U.S. EPA Method 8080, and for halogenated volatile organics by U.S. EPA Method 8010.

>100 ppm

PCB, 8010

?

4.5 GROUNDWATER (Conditional)

GW

Section 3.4 provides background information regarding the occurrence of groundwater in the vicinity of the Walker Properties site. Investigations performed at nearby properties indicate that the depth to groundwater in the area is between 85 to 95 feet below ground surface. Furthermore, site assessment work performed by IT Corporation in 1987 at the Powerine Oil Refinery (located approximately 100 feet northwest of the Walker Properties site) found that groundwater in the area has been affected by releases of petroleum hydrocarbons.

At this time, it is not known if the past activities at the Walker Properties site have affected groundwater quality. The results of the assessment of soil underlying Parcels 2 and 3 will be used to determine if an investigation of groundwater at Walker Properties is necessary. If the results of laboratory analysis of soil samples collected at depths of greater than 50 feet in these area contain greater than 100 mg/kg total petroleum hydrocarbons, the groundwater element of this investigation will proceed as described in the following sections. If the vertical extent of petroleum hydrocarbon contamination at the

?

Walker Properties site can be demonstrated to be shallower than 50 feet, the following groundwater investigation will not commence and no further investigation of this element will be performed.

4.5.1 Hydrogeologic Exploration and Groundwater Well Construction

Well Construction

If the results of the investigation of subsurface soil on Parcels 2 and 3 indicate that releases of petroleum hydrocarbons from the Walker Properties site extend beyond 50 feet, up to four groundwater monitoring wells will be installed and sampled at the site. The proposed locations for these wells are shown on Figure 4.9. The actual drilling locations may vary due to above ground or underground obstructions.

up to 4 gw well

Borings for the groundwater wells will be drilled to a depth of approximately 120 feet using continuous-flight, eight or ten-inch diameter, hollow-stem auger drilling equipment. The drilling and sampling procedures will be the same as those described in Section 4.3.3 for soil sampling.

When groundwater is encountered, borings will be advanced until terminated in five feet of competent clay aquitard or 20 feet into the water bearing zone, whichever is shallower. The borings will be converted to groundwater monitoring wells by installing four or ~~four~~ and one-half inch diameter, flush-threaded polyvinyl chloride (PVC) casing with 20 feet of 0.02-inch factory slotted screen. The screen is designed to be installed to extend ten feet ~~above and~~ ten feet below the water table.

?

PVC

The well screen and casing will be installed down the inside portion of the augers. The auger flights will be removed (five-foot section at a time) and #2 Monterey sand will be installed down the annulus between the casing and auger. Once the sand has covered the casing to two feet above the screen, a minimum of two feet of pelletized or granular

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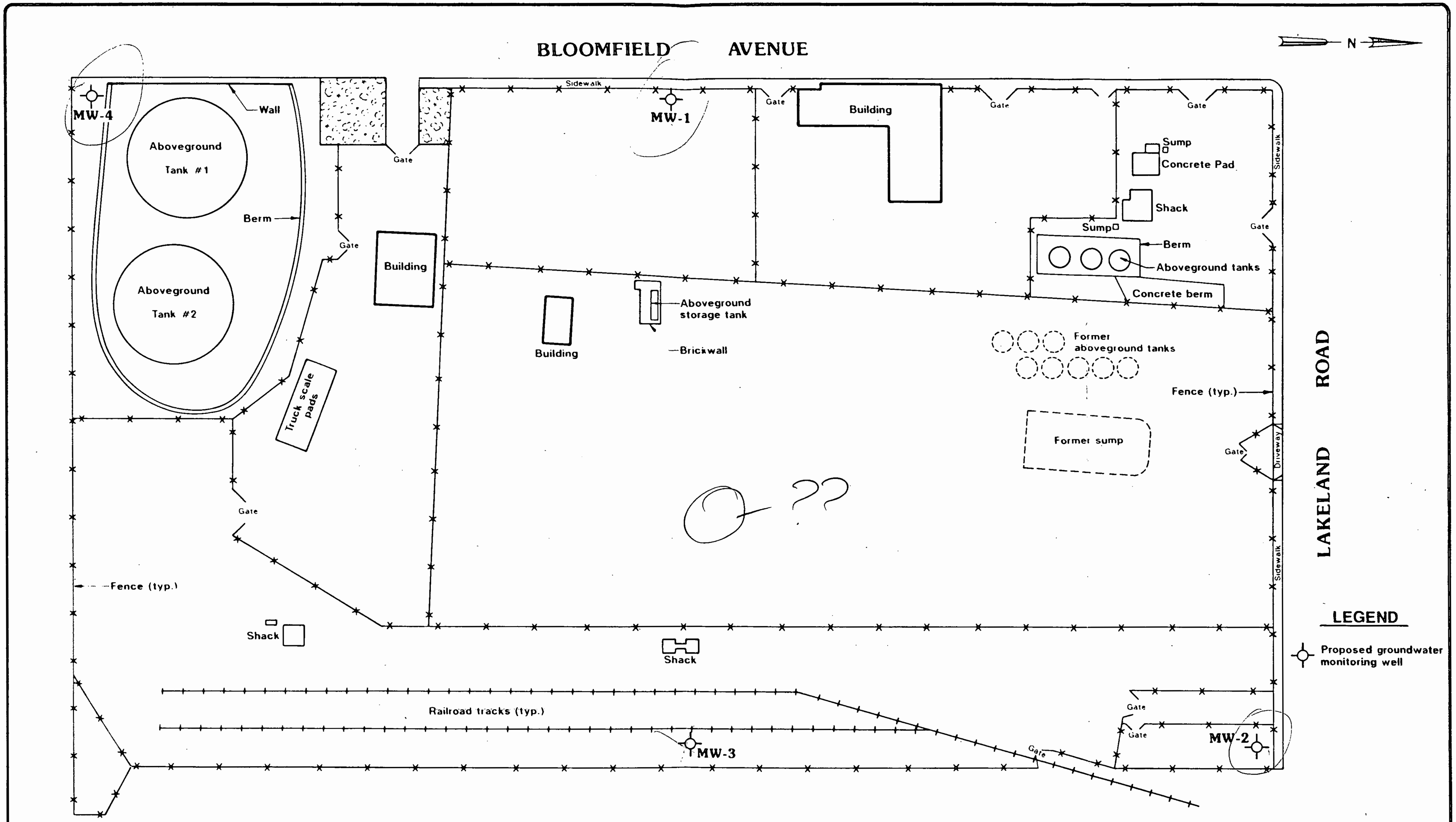

NOTE: Property boundaries and facility locations are approximate

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EMCON Associates

0 100 200 300 Feet

SCALE

WALKER PROPERTIES

SANTA FE SPRINGS, CALIFORNIA

PROPOSED GROUNDWATER MONITORING WELL LOCATIONS

FIGURE 4.9

PROJECT NO. B15-01.01

bentonite seal will be placed on top of the sand. The bentonite will by hydrated with deionized water. Above the bentonite seal, cement grout will be pumped down the annulus. Locking devices and concrete vault boxes will be installed at the ground surface to protect the wells.

Well Development

Well development will be accomplished by surging and bailing the well prior to the use of the well for sampling. The wells will be purged with a bailer until clear of most sediment. All equipment placed down the well will be steam cleaned prior to use. Water purged from the wells will be containerized on site until analytical results are available to determine its proper disposal.

Well Surveying

The location and elevations of the tops of the monitoring wells will be surveyed by a California licensed land surveyor. The vertical control on the survey should be 0.01 foot and horizontal control to 0.1 foot. This survey will be used to establish a datum for determining the horizontal groundwater gradient.

4.5.2 Well Sampling

GW Samples

Prior to sampling each well, a water level measurement will be taken with an electric well sounder which will be cleaned prior to each use. Then, each well will be checked for floating hydrocarbon product using a transparent bailer. All wells not found to contain floating product will be purged of approximately three volumes of water by pumping. The purged water will be monitored for electrical conductivity, pH and temperature. Groundwater samples will be collected with a small stainless steel bailer or sampling pump. The water sample will be retrieved to the surface and a small vial will be gently filled. The filled bottles will be sealed, labeled and stored on ice for transmittal to the laboratory. Groundwater samples will be analyzed for purgeable organics and base/neutral extractables by U.S. EPA Methods 624 and 625. GW

4.5.3 Feasibility Study Workplan for Groundwater

It is unknown if contaminants in the soil at the Walker Properties site have migrated to groundwater. If the groundwater investigation is performed and contamination is encountered, a feasibility study will be performed to evaluate and select an appropriate response. Although the nature of groundwater contamination is unknown, if it has occurred, it is likely to be due to petroleum hydrocarbons which tend to be relatively mobile in soil. It is highly unlikely that PCBs, lead or barium, which are relatively immobile, have reached the groundwater. If groundwater contamination is found, additional wells may be required to determine its full nature and extent prior to initiating a feasibility study.

The following tasks outline the principal components of the Feasibility Study for the groundwater element. F.S.

TASK 1 - Identify General Response Actions

A range of possible general response actions will be developed, based on reviewing the data collected during the hydrogeologic investigation. These responses for soil contamination at the Walker Properties site may include the following:

- No action
- Groundwater extraction and discharge
- Groundwater extraction, treatment and discharge
- In-situ treatment

TASK 2 - Identify Remedial Action Technologies

Under this task, the various technologies which may be used to remediate groundwater contamination will be identified and reviewed briefly for suitability to address the specific conditions at the Walker Properties site.

TASK 3 - Develop Remedial Action Alternatives

Detailed alternatives will be developed under this task by combining the suitable technologies identified in Task 2, above.

TASK 4 - Conduct Initial Screening of Alternative Actions

The purpose of this task is to eliminate those technologies which are not technically feasible or appropriate, prior to conducting detailed evaluations of the remaining alternatives.

TASK 5 - Pilot or Bench-Scale Studies (Optional)

If necessary, pilot studies may be performed to verify the effectiveness of proposed technologies. For example, if in-situ biological treatment is identified as a potential alternatives, laboratory studies may be required to evaluate the treatability of the contaminants found in the groundwater.

TASK 6 - Detailed Evaluation

The initial screening of alternative actions identified in Task 4, above, will produce a number of remedial actions which must be evaluated in detail to identify the most appropriate alternative. The following factors will be considered:

- Technical analysis (performance, reliability, implementability and safety)

- Environmental analysis (assessment of environmental damage or enhancement)
- Public health analysis
- Institutional analysis (evaluation of compliance with local, State or Federal regulations)
- Detailed cost analysis

DATA

5.0 DATA MANAGEMENT PLAN

5.1 INTRODUCTION

This Data Management Plan outlines procedures to ensure that the quality and integrity of data collected throughout the project are adequately maintained to promote efficient project management and to document task completion. Because the tasks to be completed during the RI/FS are described in other sections of the RI/FS Workplan, this section will focus only on the characteristics of the data management system rather than repeating other information.

5.2 OVERVIEW OF DATA MANAGEMENT PLAN

Two main types of information generated during and RI/FS must be documented: technical data and project tracking data. Technical data includes (but is not limited to) the following:

- Background research results B.G.
- Field investigation results
- Sampling data
- Laboratory analysis data
- Quality assurance plan
- Health and safety plan
- Community relations plan
- Remedial action plan
- Project memos, permits, correspondence

The second type of data is project management data which must be monitored throughout the course of the project. This includes, but is not limited to, the following major categories:

- Workplans by task (including list of endproducts)
- Workload estimates
- Schedules
- Technical status memos and reports
- Compliance with respective plans or protocols (e.g. sampling QA/QC programs)
- Comparison of planned, actual, and expected completion schedule

5.3 DATA MANAGEMENT SYSTEM

The data management system serves as a repository for reports, data, project memos, permits, administrative or legal documents, etc. obtained throughout the course of the remedial investigation. Data shall be organized in such a way that the remedial investigation events can be reconstructed in the event of a procedural review.

The data management system includes, but not limited to providing the following information about a given document or task:

- Identify the type and date of document
- Brief summary or abstract of document content
- Source of the document
- Location where document is physically stored or filed

The Project Manager is responsible for maintaining a chronology of events for the project and maintaining the project files.

5.4 COMPUTERIZED LABORATORY ANALYSIS RESULTS

Field samples collected from the soil, groundwater, surface water and/or air at the Walker Properties site will be entered into a computerized database. Key components of the computer system include:

- Hardware
- Software
- Design features and design process
- Data entry and verification protocol

Hardware: Laboratory analysis data shall be maintained on an IBM PC or AT compatible using MSDOS operating system.

Software: Analytical data shall be maintained using a database query language. The database software shall permit ad hoc data queries (sort, print and data modification). Graphical summaries may be produced from the stored data in the database.

Database Design Features: The database feature conforms to the descriptions listed below.

Data Identifications: The analytical data include important site measurements as well as the chemical analytical results. In ~~addition~~, ~~essential~~ sampling information, including but not limited to the following, ~~must be readily~~ linked to the data for graphing and reporting purposes:

- Sampling location (sampling point name and grid location)
- Sampling depth and/or elevation
- Sample type (groundwater, soil, air)
- Date and time of the sampling

- Name of person collecting the sample
- Name of the laboratory conducting the analysis
- Detection limit for each analysis
- U.S. EPA Analytical Method
- Analytical results.

Data Entry Protocol: The following data entry protocol was developed to account for data from the time that a laboratory analysis report or field log is submitted for data entry. The protocol includes, but is not limited to the following:

- All data is to be received by the Project Manager
- Project Manager retains copy of data and transmits copies to:

  a) project originals file
  b) data entry operator

- Data entry operator initials copy of data when data entry is completed and returns it to Project Manager.
- Project Manager maintains checklist which documents the handling of the data.

6.0 QUALITY ASSURANCE PROJECT PLAN

QAPP

6.1 PURPOSE

The purpose of this Quality Assurance Project Plan (QAPP) is to develop procedures to help ensure control and documentation of data quality.

6.2 PROJECT ORGANIZATION

The organization structure includes a Project Manager, QA/QC Officer, Laboratory Analysis Leader, and Site Manager.

6.3 PROJECT RESPONSIBILITIES

Project Manager: The Project Manager serves as the main contact for Mr. Walker and the regulatory agencies. The Project Manager will coordinate work done by any subcontractors. Bonnie Teaford, P.E., will be the Project Manager.

QA/QC Manager: The QA/QC Project Officer will be responsible for coordinating all quality control aspects of the project and will serve as liaison between the Site Manager, the laboratories performing chemical analyses and the Project Manager. The Project QA/QC Manager will be responsible for identifying quality control problems and recommending or reviewing appropriate corrective actions. Ralph Schmitt, P.E., is EMCON's QA/QC Manager.

Laboratory Analysis Leader: The chemical analytical laboratory will designate a person who is responsible for the precise, accurate and timely analysis of project samples. This person will also be primary contact with the EMCON QA/QC Manager.

Site Manager: The on-site investigation will be supervised by the Site Manager, who is responsible for ensuring that the sampling procedures (described in Chapter 4) are followed in the field. Who?

6.4 ANALYTICAL LABORATORY

Truesdail Laboratories in Tustin, California, have been selected as the primary laboratory to perform all soil and water analyses. Truesdail Laboratories are certified by the California Department of Health Services. Brown and Caldwell Laboratories, and Burmah Technical Services also certified laboratories will be the back up laboratories. Selected soil and water samples will be analyzed for the compounds shown on Table 6.1.

Specific sampling locations, the number of samples and the analyses to be assigned to each sample are also summarized in Table 6.1. Sample containers, preservatio and holding times are provided in Table 6.2.

6.5 SAMPLING AND HANDLING PROCEDURES

Sampling Locations and Rationale: The sampling locations are described in Chapter 4.

Soil and Water Sampling Procedures: The sampling procedures are described in the sampling workplan for each parcel and for groundwater as discussed in Chapter 4.

Well Construction Procedures: These procedures are described in Chapter 4.

Sample Containers, Preservation, Transportation and Maximum Holding Times: The required sample containers and preservatives, along with the maximum sample holding times are presented in Table 6.2.

TABLE 6.1

SUMMARY OF PROPOSED SAMPLES

Depth?

Parcel No.	Description	Sample No.	U.S. EPA Analytical Method	Compound Class
		SOIL		
2	Stockpiled Soil	SP-1	M8015[1]	TPH[2]
2	Stockpiled Soil	SP-2	M8015	TPH
2	Beneath Tank 1	B-14A	418.1	TPH
2	Beneath Tank 1	B-14B	418.1	TPH
2	Beneath Tank 1	B-14C	418.1	TPH
2	Beneath Tank 1	B-14D	418.1	TPH
2	Between Tanks 1 and 2	B-15A	418.1	THP
2	Between Tanks 1 and 2	B-15B	418.1	TPH
2	Between Tanks 1 and 2	B-15C	418.1	TPH
2	Between Tanks 1 and 2	B-15D	418.1	TPH
2	Beneath Tank 2	B-16A	M8015	TPH
2	Beneath Tank 2	B-16B	M8015	TPH
2	Beneath Tank 2	B-16C	M8015	TPH
2	Beneath Tank 2	B-16D	M8015	TPH
3	Former Above Ground Tanks	B-17	8240, 8270, 7420, 7080	Volatile and Semi-volatile Organics, Pb, Ba[3] Cu ?
3	Former Above Ground Tanks	B-18	8240, 8270 7420, 7080	Volatile and Semi-volatile Organics, Pb, Ba Cu
3	Southern Portion	B-19	418.1	TPH
3	Southern Portion	B-20	418.1	TPH
3	Southern Portion	B-21	418.1	TPH
3	Southern Portion	B-22	418.1	TPH
3	Sump, Post-excavation	PE-1A	418.1, 8080	TPH, PCB[4]
3	Sump, Post-excavation	PE-1B	418.1, 8080	TPH, PCB
3	Sump, Post-excavation	PE-2A	418.1, 8080	TPH, PCB
3	Sump, Post-excavation	PE-2B	418.1, 8080	TPH, PCB
3	Known Contamination area, post-excavation	PE-3 through PE-39	8080 ? 418.1	PCB ?

Parcel 2

Parcel 3

PJB/B150101.DOC

TABLE 6.1 (Continued)

SUMMARY OF PROPOSED SAMPLES

Parcel No.	Description	Sample No.	U.S. EPA Analytical Method	Compound Class
	SUMP AND TANK CONTENTS			
3	Above Ground Tank Contents	TS-1	8080	PCB
3	Above Ground Tank Contents	TS-2	8080	PCB
3	Above Ground Tank Contents	TS-3	8080	PCB
3	Sump Contents	S-1	608	PCB
3	Sump Contents	S-2	608	PCB
	GROUNDWATER (Conditional)			
1	Groundwater	MW-1	624, 625	Purgeables, Base/Neutrals
1	Groundwater	MW-2	624, 625	Purgeables, Base/Neutrals
1	Groundwater	MW-3	624, 625	Purgeables, Base/Neutrals
2	Groundwater	MW-4	624, 625	Purgeables, Base/Neutrals
2	Groundwater Duplicate	MW-4	624, 625	Purgeables, Base/Neutrals
-	Trip Blank	MW-5	624, 625	Purgeables, Base/Neutrals

8240/8270 done? ? only?

? Water? test

?? 8080

Notes:
1. M8015 is U.S. EPA Method 8015, modified.
2. TPH = Total Petroleum Hydrocarbons
3. Pb, Ba = Lead, Barium
4. PCB = Polychlorinated Biphenyls

QA/QC

TABLE 6.2

SAMPLE CONTAINERS, PRESERVATION AND HOLDING TIMES

Analytical Parameter (U.S. EPA Method No.)	Container	Preservation	Holding Time
	SOIL		
TPH (418.1, 8015)	Sealed Sample Ring	Storage at 4°C	14 days
Volatile Organics (8240)	Sealed Sample Ring	Storage at 4°C	Not specified
Semi-volatile Organics (8270)	Sealed Sample Rings	Storage at 4°C	Extraction within 14 days, analysis within 40 days
Lead and Barium (7420, 7080)	Sealed Sample Rings	Storage at 4°C	As soon as possible
PCBs (8080)	Sealed Sample Rings	Storage at 4°C	Extraction within 7 days, analysis within 30 days
	TANK AND SUMP CONTENTS		
PCBs (8080)	Sealed Glass Containers	Storage at 4°C	Extraction within 7 days, analysis within 30 days
PCBs (608)	Sealed Glass Containers		Extraction within 7 days, analysis within 30 days
	GROUNDWATER		
Purgeables (624)	40 ml VOA vials with Teflon Septa	Storage at 4°C	14 days
Base/Neutrals (625)	40 ml VOA vials with Teflon Septa	Storage at 4°C	Extraction within 7 days, Analysis within 40 days

VOA vocals ?

All sample bottles for water will be made of borosilicate glass with Telfon-lined caps. The samples will be kept cool during collection and shipment with regular ice contained in triple plastic bags to prevent leakage. The soil and water samples will be placed in "zip-lock" plastic storage bags and will be stored in an appropriately sized durable ice chest. Samples in glass bottles will be placed on a layer of packing material, such as vermiculite. Samples along with chain-of-custody records will be transported by car to Truesdail Laboratories (or Brown and Caldwell Laboratories) the same day they are collected.

Field Custody Procedures: The sample custody procedures ~~for the Walker~~ Properties site will conform to the guidelines in the U.S. EPA SW-846, "Test Methods for Evaluating Solid Wastes:, November, 1986. The Site Manager will be responsible for sample custody in the field.

At collection, the sample bottles and soil sleeves/tubes will be sealed with tape. Sample labels used on the bottles will be of a type that cannot be removed. Each sample is to be labeled and identified with the following: sample number, name of collector, date and time of collection, required analyses, and place of collection. Samples will be logged into the daily field log by the field personnel who collect the samples. The Site Manager will verify that chain-of-custody procedures were followed.

A thorough chain-of-custody program will allow for the tracing of possession and handling of individual samples from the time of field collection through laboratory analysis. The chain-of-custody documentation will include:

- Sample labels which prevent misidentification of samples will be affixed to each sample container. The labels will be sufficiently durable to remain legible even when wet and will contain the following types of information:

  Sample identification number

Name of collector

Place and date of collection

Parameter(s) requested

- Sample seals will be used to preserve the integrity of the sample from the time it is collected until it is opened in the laboratory. A seal will be provided on the shipping container and individual sample containers to ensure that the samples have not been disturbed during transportation.

- Field Log Book will be kept to record information pertinent to field surveys and sampling during the investigation program. The field log book serves primarily as a daily log of the activities carried out during the investigation. The following information will be included in a typical log entry:

Location of sampling point

Depth of sample collected

Type of material

Suspected chemical concentration

Volume of sample taken

Description of sampling point and sampling methodology

Date and time of collection

Collector's sample identification number(s)

Field observations

Field measurements made

Personnel responsible for observations

- Chain-of-custody records will be maintained to establish the documentation necessary to trace sample possession from the time of collection to analysis. A chain-of-custody record will be used to record the samples taken and the analyses requested. A copy of the chain-of-custody record will be retained by the sampler prior to shipment. A chain-of-custody record is comprised of the following entries:

Sample number

Signature of collector

Data and time of collection

Place and address of collection

Sample type

Signature of persons involved in the chain of possession

A copy of EMCON's Chain-of-Custody Record is provided as Figure 6.1.

- Sample analysis request sheets will be completed which serve as official communication to the laboratory of the particular analysis(es) required for each sample and provide further evidence that the chain-of-custody is complete;

  The sample analysis request sheet will contain the following information:

  Name and affiliation of sampler

  Date and time samples were collected

  Laboratory and field identification numbers

  Type of sample

  Analyses requested

  Special precautions

  Signature of person at the lab who received the samples

  Date and time of sample receipt

  Analyses required

?

Transfer of Custody: Chain-of-custody procedures provide evidence that a sample has not been tampered with. This is achieved by creating an accurate written record tracing the possession of the sample from collection through its final analysis and possible introduction as court evidence. Custody samples are either in actual physical possession or locked up to prevent unauthorized access.

?, seal?

SAMPLING AND ANALYSIS CHAIN OF CUSTODY RECORD

EMCON ASSOCIATES

PROJECT NO. ____________________ EMCON LABORATORY NO. ____________________

REQUEST			LABORATORY REQUIREMENTS				CHAIN OF CUSTODY							
SAMPLE TYPE									EMCON ASSOCIATES			CONTRACT LABORATORY		
SAMPLE ID	LAB ID	PARAMETERS	BOTTLES	PRES.	LABORATORY	PO #	SAMPL'D BY	DATE	REC'D BY	DATE	COMMENTS	REC'D BY	DATE	COMMENTS

SIGNATURES:

LABORATORY REPRESENTATIVE: ____________________

RELEASED TO COURRIER BY FIELD PERSONNEL: ____________________

RECEIVED BY COURRIER: ____________________

RELEASED TO LABORATORY BY COURRIER: ____________________

RECEIVED BY LABORATORY: ____________________

RELEASED TO LABORATORY BY COURRIER: ____________________

RECEIVED BY LABORATORY: ____________________

FIGURE 6.1

When the laboratory log-in clerk receives the sample, receipt will be documented by signing the accompanying chain-of-custody paperwork. The laboratory will file copies of the chain-of-custody paperwork for internal recordkeeping and return the original forms back to the Project Manager.

Shipping receipts will be signed and filed as evidence of custody transfer between field sampler and courier, and courier and laboratory.

Sample Receipt and Log-In: Upon receipt of samples, the log-in clerk will inspect each sample for broken or leaking containers, inverted septa, inappropriate caps or bottles, air bubbles in volatile organics samples, incomplete sample labels, incomplete paperwork, or discrepancies between the sample labels and the paperwork. The clerk will notify the laboratory QA/QC officer of problems. If the samples pass initial inspection, they will be logged into the laboratory sample management system. If a problem is discovered, the laboratory will immediately notify the Project Manager.

6.6 FIELD QA/QC

Decontamination and Cleaning Procedures: Drilling equipment used in the course of the investigation, which may affect sample quality, will be decontaminated using the following steps and frequency:

Auger Rig and Sampling Rig	Brush off dry material then steam clean at mobilization and demobilization.
Augers	Steam-clean prior to each boring.
Other Equipment	Hand wash with detergent, rinse with deionized water as required and at demobilization.

All wash waters and rinse waters will be collected in buckets or drums and will be held on site in a collection vessel. At demobilization, the contents of the vessel(s) will be tested for PCBs and volatile organics. The water will be held on site for eventual proper disposal.

Calibration of Field Instruments: The electrical conductivity (EC) meter, pH meter and photoionization detector (PID) will be calibrated in the field according to the procedures outlined below.

EC Meter: The EC meter will be calibrated over the operating ranges expected in the field. Calibration will be made on two standards on each day of use, with the results being recorded in the field book.

pH Meter: The pH meter will be calibrated on the day the water samples are taken. The calibration will include settings the range and span with 7.0 pH buffer and a 4.0 or 10.0 pH buffer depending on whether alkali or acidic water conditions are encountered. The calibration will be checked before and after sampling, with the results of the calibration being recorded in the field book.

PID Meter: The PID will be calibrated in the field according to the manufacturer's instructions.

QA/QC

Field QA/QC Samples: The field investigation team will be responsible for taking field duplicates and blanks.

If groundwater wells are installed, one field duplicate will be taken for every 10 samples of water collected. Two sets of containers will be submitted for analysis. ~~This will provide a combined measure of sampling and analytical precision.~~ Due to the hetergenous nature of soil, duplicate soil samples will not be submitted.

A trip blank for water samples will consist of lab reagent water shipped to and from the sample site in the same type of sample container and with the same preservative and handling as the collected samples. One trip blank set will be included in each shipping container.

All of the above mentioned QA samples will be sent to the lab "blind", that is, with unique sample identification numbers so that no reference is provided to the laboratory for comparison of duplicates or identification of blanks.

Additional Field Documentation:

Boring/Well Logs: The preferred log sheet for documenting field geologic conditions will include the following where possible:

- Project name
- Hole name/number
- Date started and finished
- Geologist's initials
- Driller's name
- Sheet number
- Hole location
- Rig type
- Bit size/Auger size
- Depth
- Sample location/number
- Blow counts and advance rate
- Percent sample recovery
- Narrative description
- Depth to saturation
- Possible contamination

- Deviations from drilling plan
- Weather
- Geologic Observations:
  - soil/rock type
  - color and stain
  - friability
  - moisture content
  - degree of weathering
  - fractures
  - bedding
  - discontinuities: e.g., foliation
  - water-bearing zones
  - fossils
  - depositional structures
  - organic content
  - suspected contaminant
  - drilling difficulties
  - changes in drilling method or equipment
  - reading from vapor monitoring equipment, if any

Well Construction Log: If groundwater wells are installed, well ~~construction logs will be~~ prepared for each well. Well construction logs supplement the boring logs and will include the following additional information:

- Project name
- Boring/well number
- Top of casing elevation
- Ground surface elevation
- Datum
- Total depth of boring

- Material
- Casing length and diameter
- Depth to top of perforations
- Perforated length
- Size and type of perforations
- Seal materials/depth
- Filter pack materials/depth
- Schematic drawing of well showing dimensions

Groundwater Sampling Log: This form will be used any time that a well is sampled. The date and time of sampling is duly recorded. The volume of standing water in the well will be calculated using the bottom of the well and the water level to obtain the length of the water column, which is then multiplied by the volume of water per foot of casing. The volume removed before the well is sampled will be recorded. The type of pumping and sampling systems will be noted, as well as the samples taken for field and lab analysis. Finally, the sampler's name will be affixed.

6.7 ANALYTICAL PROCEDURES

The methods to be used in the analysis of soil and water samples are provided in Table 6.1. Analytical QA/QC will be followed as stipulated in the Truesdail Laboratories QA/QC manual presented in Section 6.8.

6.8 LABORATORY QA/QC PROGRAM

Truesdail Laboratories' QA/QC Manual is attached on the following pages. These manual covers Truesdail's program for insuring valid data. Some of the material in the manual overlaps with previous section of this Workplan, such as custody procedures. However, several sections of the QA/QC manual refer to internal QA/QC specifically relating to analytical control and data validation. Copies of the back-up laboratories' QA/QC manuals are available on request.

Truesdail Laboratories, Inc.

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QUALITY ASSURANCE PROJECT PLAN

FOR

ROUTINE ANALYSIS OF ENVIRONMENTAL SAMPLES

April 24, 1988

TABLE OF CONTENTS

1.0 Introduction

This Quality Assurance Project Plan is designed to conform with the requirements of the Interim Guidelines and Specifications for preparing Quality Assurance Project Plans publication numbers QAMS-005/80 from the Office of Monitoring Systems and Quality Assurance, Office of Research and Development of the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers regulation ER 1110-1-263.

2.0 Facilities and Instrumentation

Truesdail Laboratories offers both engineering and chemical analytical services. The main facility in Tustin, California contains 40,000 square feet of which about 12,000 is devoted to chemical laboratory space (see Illustration 1). This includes the Racing and Air Pollution laboratories on the ground floor, and the Water and Waste, Instrumentation, Microbiology, and General Chemistry laboratories on the upper floor.

The Water and Waste Laboratory occupies 4200 square feet, including a separate room containing a Perkin-Elmer ICP/ 5500 inductively coupled plasma spectrophotometer, and Perkin-Elmer model 403, Varian-Techtron atomic absorbtion spectrophotometers, and a GBC System 2000 atomic absorption Spectrophotometer. Another separate room (1100 square test) contains fume hoods used for sample preparation. This laboratory also houses a Beckman model 915 Total Organic Carbon analyzer with model 865 infra-red detector. A Dohrman DC S4 total Organic Carbon Analyzer and a Perkin Elmer 257 Infra-Red analyzer.

The Instrumentation Laboratory occupies 2100 square feet and houses the following instruments:

Four Tracor model 540 gas chromatographs equipped with Tekmar model LSC 2 purge and trap samplers, and Tracor model 703 photoionization and model 700A Hall electrolytic conductivity detectors in series. Two instruments are equipped with O.I. Corporation autosamplers.

A Tracor model 540 gas chromatograph with a Tracor model 702 Nitrogen-Phosphorous detector and a flame ionization detector, as well as a Dynatech autosampler.

A Tracor model 540 gas chromatograph with two model 704 Electron Capture detectors.

A Tracor model 540 gas chromatograph with a model 703 photoionization detector in series with a flame ionization detector.

A Hewlett-Packard model 5710A gas chromatograph with a Hewlett-Packard model 5709 electron capture detector.

A Shimadzu GC-9A gas chromatograph equipped with a Tekmar model LSC 2 purge and trap sampler coupled with Tekmar ALS autosampler and two flame ionization detectors.

An Analect Instruments model fx6160 Fourier-transform infrared spectrophotometer.

A Shimadzu model LC-6A high performance liquid chromatograph equipped with UV and fluorescent detectors.

A separate GC/MS facility of 775 square feet on the second floor houses two Hewlett-Packard GC/MS systems (5995C and 5970). Data from both are analyzed with an RTE-6/VM GC/MS data system running on a Hewlett-Packard model 1000 computer.

The Racing Laboratory occupies 1500 square feet including a separate room containing a Finnegan 4000 series gas chromatograph/mass spectrometer, and another room containing a Technicon autoanalyzer high performance liquid chromatograph, a Beckman model LS100C liquid scintillation counter. A Shimadzu LC-6A high performance liquid chromatograph and a Beckman DU-50 UV-visable spectrophotometer.

The Air Pollution Laboratory occupies 1500 square feet and houses a Hewlett-Packard model 402 gas chromatograph with flame ionization and electron capture detectors and a Tracor model 310 Hall electrolytic conductivity detector, a Hewlett-Packard model 5700 gas chromatograph with a flame ionization detector, and a Tracor 540 gas chromatograph with FPD and TCD detectors.

The General Chemistry Laboratory occupies 1900 square feet and houses a Dionex model 4000 Ion Chromatograph.

3.0 Project Organization and Responsibility

3.1 The organization chart for Truesdail Laboratories is presented as Illustration 2.

The following personnel are directly involved in the process of ensuring the collection of valid data for this project:

Name	Title	Responsibilities
Dr. N. Hester	Technical Director	Oversight of all aspects of project.
Mr. P. Eskridge	Quality Assurance Director	Oversight of QA Program.
Mr. S. Roesch	Chief Scientist	Management of, sampling Inorganic Analysis, and Microbiology
Mr. J. Bramblett	Manager, Instrument Lab	Management of Organic analysis.
Ms. J. Nayberg	Manager, Water & Waste Lab	Coordination of analysis between departments, writing reports, primary contact with client.
Mr. M. Rasoulizadeh	Quality Assurance Specialist	Ongoing QA monitoring, monthly reports to management.

When a valid analysis yields a result for a parameter which is above the maximum contaminant level, supervisory level personnel should be contacted.

4.0 Quality Assurance Objectives

4.1 Precision, Accuracy, and Completeness

The Quality Assurance objectives for precision, accuracy, and completeness for each major parameter are presented in Table 1. Details concerning monitoring these parameters of the measurements systems are found in Sections 10 and 13.

4.2 Internal Quality Control Checks

The total proportion of samples analyzed to meet requirements of internal quality assurance will be the goal of 10%. Blanks, duplicates and spikes should be analyzed for each batch of samples or each matrix or 20 samples, whichever is more frequent. QA

4.3 External Quality Control Checks

External quality control samples will be submitted blind; therefore results will be reported in the same manner as live samples. QC

4.4 Data Comparability

Results for all analyses will be expressed in the appropriate units as indicated in the description of detection limits above, and in Table 1.

5.0 Sampling Procedure

Obtaining representative samples and maintaining their integrity are critical parts of any monitoring or enforcement program. Analytical methods have been standardized, but the results of analysis are only as good as the sampling and the sample preservation methods.

If requested by the client, Truesdail Laboratories can provide trained staff to collect samples. When a client choses to collect their own samples, our staff can brief clients on the proper methods of sample collection.

Truesdail Laboratories can also provide clients with the appropriate sample containers. Table 1 lists the container types, sizes, preservatives, container closures, and maximum holding times for analytical parameters. An example of instructions provided to customers is provided in illustration 3.

Table 1
Summary of Special Sampling on Handling Requirements

Determination	Container	Size	Closure	Preservative	Holding Time
Alkalinity	Plastic	500 ml	Plastic Cap	Refrigerate	14 days
Anions	Plastic	500 ml	Plastic Cap	Refrigerate	28 days
BNA	Amber Glass	2 liter	Teflon liner	Na_2SO_3	7 days
Boron	Plastic	100 ml	Plastic Cap	Refrigerate	28 days
COD	Plastic	100 ml	Plastic Cap	H_2SO_4	28 days
Cyanide	Plastic	500 ml	Plastic Cap	NaOH	14 days
Grease and oil	Glass	1 liter	Teflon liner	HCL	28 days
Herbicides	Amber Glass	2 liter	Teflon liner	Na_2SO_3	7 days
Metals	Plastic/Glass (Acid Washed)	500 ml	Plastic Cap	HNO_3	6 months
Mercury	Plastic (Acid Washed)	500 ml	Plastic Cap	HNO_3	28 days
Pest/PCB	Amber Glass	2 liter	Teflon liner	Na_2SO_3	7 days
Petroleum Hydrocarbons	Glass	1 liter	Plastic Cap	H_2SO_4	28 days
pH	Plastic	500 ml	Plastic Cap	Refrigerate	Immediately
Phenols	Amber Glass	500 ml	Plastic Cap	H_2SO_4	28 days
Phosphate	Glass	100 ml	Plastic Cap	Refrigerate	2 days
Sulfate	Plastic/Glass	---	Plastic Cap	Refrigerate	28 days
TOC	Glass	100 ml	Plastic Cap	Refrigerate	7 days
All Soil Analysis	Glass Wide mouth	8 oz	Teflon liner	Refrigerate	Same holding
VOA	Amber Glass	40 ml	Teflon Septum	Na_2SO_3	14 days

BNA = Base Neutral Acid Extractable Organics
VOA = Volatile Organic Analytes
Pets/PCB = Pesticide and Polychlorinated Biphenyls

6.0 Sample Custody

6.1 Sample custody forms are accepted at Truesdail Laboratories from the customer or we provide the forms (see illustration 4). These forms indicate the name of the person who collected the sample and the date and time of collection. Space is provided to describe the sample and give analysis instructions. When Truesdail Laboratories personnel receive the samples they sign the sample custody form indicating time and date.

Upon arrival at Truesdail Laboratories the samples are logged into a standard log book (see Illustration 5). A sample identification number is assigned, the sample information is logged onto our lab computer, and the sample is dispersed for analysis. Samples sent from the Water Chemistry laboratory to the Instrument laboratory are accompanied by an intra-company analytical request form (see Illustration 6). One copy is retained by the Water Chemistry laboratory, one by the Instrument laboratory, and one becomes part of the file used to compile the report after analysis. Results from analysis are sent to the supervisor of the appropriate department for review and are then returned to a project manager for generation of the report. Examples of the forms used to report the results of analysis are presented as Illustrations 7 and 8.

7.0 Calibration Procedures and Frequency

In each laboratory a set of Standard Operating Procedures is kept in an easily accessible location. A section in each SOP deals with calibration of the instrument required for the procedure. A record containing relevant information about each set of working standards is kept in each laboratory in a special Standards logbook.

In the Instrument laboratory the gas chromatographs are calibrated using standards manufactured by Chem Service of West Chester, Pennsylvania. Catalog number 99521 (Purgeable Halocarbons) is used for EPA methods 601 and 8010, and catalog number 99523 (Purgeable Aromatics) is used for EPA method 602 and 8020. Catalog number 99534 (Organochlorine Pesticides) is used for EPA method 608 and 8080, and catalog numbers 99506 (Base/neutral mixture) and 99510 (Phenols mixture) are used for EPA method 625 and 8270. The manufacturer certifies that these standards are traceable to NBS standards and verified versus EPA standards. The frequency of calibration is determined by the result of the daily analysis of the Q.C. check sample.

In the Water and Waste laboratory the A.A. and ICP spectrophotometers are calibrated when indicated by performance on Q.C. check samples. Calibration procedures are contained in the SOP manual. All standards are certified to be traceable to NBS standards by the manufacturers. Some typical standards are listed below:

Parameter	Manufacturer	Catalog Number
Cadmium	SPEX Industries, Inc	PLCD-3X
Chromium	"	PLCR-3X
Copper	"	PLCU-3X
Lead	"	PLPB-3X
Nickel	"	PLNI-3X
Silver	"	PLAG-3X
Zinc	"	PLZN-3X
Arsenic	Spectrum Chem. Co.	AA 115
Mercury	"	AA 230

8.0 Analytical Procedures

The relevant sections of the Standard Operating Procedure manual are available as a separate documents. The methods described follow EPA standard procedures.

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9.0 Data Reduction, Validation, and Reporting

9.1.1 Data reduction for EPA gas chromatograph methods.

Data reduction is automated using three Dynamic Solutions systems to collect and process detector data. Parameter identity assignments are made based on retention times, and concentrations are calculated using a three point calibration curve.

9.1.2 Data reduction for metals.

Data reduction on the ICP spectrophotometer is automated on a Perkin Elmer combuster. A.A. data is automated on an IBM (clone). The instrument corrects the results for environmental samples by subtraction of the appropriate blank and then the slope of the multipoint calibration curve is used to report the concentration to the analyst in ppm.

9.1.3 Data reduction for EPA GC/MS methods

Data reduction on the GC/MS data system is fully automated (HP 1000 computer). The instrument reports the results of analysis to the analyst in EPA report format.

9.2.1 Validation of data for EPA methods

The principal criteria used for validation of data integrity for data collected by EPA methods are quality control charts which use data from, surrogate recovery, spike recovery and duplicate analysis to monitor the precision and accuracy of the measurement system, see section 13.

9.3 Outliers

Outliers will be rejected during the process of compiling data for establishing control limits and graphing control charts. The standard Dixon test will be used to determine which points, if any, are questionable; these points will be marked and excluded from calculations used to establish control limits. The test will <u>not</u> be used to screen results used to determine whether a system is in control. <u>All</u> results from check samples and blanks, all surrogate results, etc. well be used to evaluate the performance of the system. They will later be tested to exclude questionable numbers before being included in the statistical description of the system.

10.0 Definition of Internal Quality Control Components

Definitions of the elements of the internal quality control system are given below. Additional information about quality control procedures is presented in Section 14. Note that some of the elements below are general in nature, while some are mainly applicable to organic or inorganic analysis.

10.1 System Blank - the system is run without a sample in the same manner as if a sample were present. It is used to verify that the background due to column or other equipment contamination is below detection limits.

10.2 Method/reagent Blank - a sample of reagent water which is processed exactly as if it were an environmental sample. It is used to monitor the background due to reagents and labware used.

10.3 Calibration Blank - a volume of deionized distilled water acidified with HNO_3 and HCl and analyzed directly.

10.4 Calibration Standard - a sample prepared using a concentrated standard (certified as traceable to NBS and EPA standards by the manufacturer) which is carefully diluted as directed by the calibration section of the Standard Operating Procedures. These standards are used to quantitate the compound in environmental samples.

10.5 Instrument Check Standard - a multielement standard of known concentrations prepared by the analyst to match the midpoint of the calibration standard series and used to monitor the performance of the instrument on a daily basis.

10.6 Quality Control Check Standards - prepared from EPA Quality Control check sample concentrate by dilution using reagent water. Results of analysis are compared with calibration standard results. If the relative percent difference is 25% or greater then the instrument must be recalibrated.

10.7 Spiked Duplicate - prepared by addition to an aliquot of the environmental sample of a known amount of the compound being assayed from a laboratory reagent stock, and analyzing this sample in duplicate. The results from analysis of the untreated environmental sample and the spiked environmental sample are used to calculate percent recovery of the spike:

P = 100 (A-B)/T

Where P = percent recovery

A = measured value of the analyte concentration in the spiked sample

B = measured value of the analyte concentration in the untreated environmental sample

T = known amount of compound added expressed as final concentration in the sample

This assumes the volume of the spiked aliquot was not significantly increased during the spiking process. This is assured by using concentrated solutions of spiking compounds. Tolerance limits for acceptable percent recovery are described in Section 14.

The results from the analysis of the duplicated spiked aliquots are used to monitor the precision of the measurement system. Precision data are assessed using the industrial statistic, I, as described in Section 14.

10.8 Interference Check Sample - A sample containing both parameters of interest and interfering compounds at known concentrations. Used to verify background and interelement correction factors.

10.9 Internal Standards - prepared by addition of a known amount of a compound not expected to be present in the environment standard from a laboratory reagent stock. The internal standard is added just prior to analysis of the sample. The internal standard is used to monitor the operation and sensitivity of the analytical system and the effectiveness of the purge and trap apparatus.

10.10 Control Chart - the basis for objective consideration of analysis results for a control sample is the control chart. Construction of such a chart requires the assumption that the laboratory data approximates a normal distribution. A useful way to plot such data is to let the vertical scale represent the units of analytical results, and to enter the results along the horizontal axis in the order in which they were obtained. The mean and the limits of dispersion, expressed in terms of the standard deviation, are then calculated and plotted. (See section 14 for detailed calculations.)

The upper and lower control limits (UCL, LCL) are set at +3 and -3 standard deviations from the mean, respectively, and the upper and lower warning limits (UWL, LWL) at +2 and -2 standard deviations. Results which fall outside the control limits signal an analysis which is out of control and indicate that analytical results for unknown samples obtained in the same run are suspect. See Section 15 for out of control procedures. While results which fall outside the warning limits do not require strong action, a response may be necessary when results exceed these limits on a regular basis since this may indicate laboratory precision is not as good as expected.

An example of a standard control chart along with the data used to generate it is shown in Illustration 9.

11.0 Systems and Performance Audits

11.1 Systems Audit - the measurement system used at Truesdail Laboratories for analysis of each parameter required in this project consists of four basic components: personnel, reagents and instrumentation, methods of analysis, and the quality assurance program. Standards for evaluation of each of these components are described or referenced below.

Requirements for personnel training and experience are contained in the Truesdail Laboratories Manual Of Standard Practice Quality Assurance System, available as a separate document. All reagents used are of the highest quality and meet or exceed the requirements listed in the EPA standard procedures used.

The instruments used are substantially in compliance with requirements of EPA standard methods. In all cases where instrument specifications deviate from requirements, the modification were made to improve performance. Documentation which demonstrates that these modified instruments do perform as well as or better than required by EPA standard methods has been demonstarted.

The quality assurance project plan has been prepared to be in compliance with the Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans publication number QAMS-005/80 of the Office of Monitoring Systems and Quality Assurance, Office of Research and Development, U.S. Environmental Protection Agency, and U.S. Army Corps of Engineers regulation ER 1110-1-263.

QAMS

11.2 Performance Audits - monthly summaries are made from quality control data for each parameter measured, and reviewed to determine that accuracy and precision remain within the allowed limits as listed in the table in Section 5. If drift in the mean or excessive scattering of quality control analysis values outside warning limits is detected, action will be suggested to bring the measurement system into better control. The quality control standards used in this process originate from the Environmental Monitoring and Support Laboratory of the U.S. Environmental Protection Agency in Cincinnati, Ohio, if available. This constitutes an external check on Truesdail Laboratories performance. In addition, external samples are analyzed on a semi-annual or annual basis as part of overall laboratory auditing procedures.

12.0 Preventative Maintenance

The recommended schedules for preventative maintenance are contained within the Standard Operating Procedures. In each case a list of critical spare parts which should be kept on hand is included.

13.0 Quality Assurance Procedures

This section describes procedures used to assess precision, accuracy, and completeness of the measurement systems both by the means required by EPA Methods, and by the statistical methods used by Truesdail Laboratories as part of internal quality control procedures.

13.1 Precision - precision will be determined using data from the analysis of spiked laboratory duplicates of environmental samples.

EPA Methods base precision control limits on the standard deviation of spike recovery data, as described in Section 13.2. The limits in Table 1 (Section 5) for precision are taken from the relevant EPA method. Results which fall outside these limits are considered out of control and require appropriate action to be taken as described in Section 14. In addition, Truesdail Laboratories uses the results of duplicate analyses to monitor precision.

The Re~~lative~~ Percent Difference (RPD) between the analyses of the duplicate ~~samples is calcul~~ated as follows:

Duplicate

$$RPD = \frac{|s-d|}{(s+d)/2} \times 100$$

$\frac{5-4}{5+4/2}$ x OC $\frac{1}{4.5}$

where s = the first sample value
and d = the duplicate value

Duplicate analyses which return values above five times the method detection limit and an RPD greater than 20% are considered to be insufficiently precise and out of control procedures are initiated as described in Section 14. RPD values are plotted as RPD versus sample number.

5X DL or > 20% RPD ?

9 $\frac{100-90}{100+90/2}$ $\frac{10}{95}$ x 100 = 10.53

13.2 Accuracy - for EPA Organic Methods spike recovery data are used to determine the accuracy of the ~~measurement system~~. After data for five spiked environmental samples are collected, average percent recovery, P, is calculated, along with the standard deviation, Sp. P is compared with the limits listed in Table 1 (Section 5) for accuracy, and Sp is compared with the limits for precision. In addition, a control chart is maintained for spike recovery results. Limits are set for a range from P + 2Sp to P - 2Sp. Results which are outside these limits are out of control. See section 14 for the appropriate action to be taken.

For EPA Metals methods accuracy will be monitored using data from analysis of instrument check standards and a standard control chart as described in Section 10.9. A minimum of 20 determinations are needed for construction of the control chart. The mean is calculated and plotted on the graph. Standard deviation is calculated as follows:

$$SD = \left(\frac{X^2 - nX^2}{n-1}\right)^{1/2}$$

Where SD = Standard deviation
n = Number of determinations
X = Mean of the determinations
X^2 = Sum of the squares of the determinations

Warning limits are set at X + 2 SD and X - 2 SD. Control limits are set at X $\pm$ 3 SD, and all four limits are plotted on the chart. Results of analysis of instrument check standards are plotted in sequence along the horizontal axis. After every 10 to 20 determinations the mean and the control and warning limits are updated.

Failure of the results ~~of analysis of the~~ instrument check standards to be within $\pm$ 5% of true value or within established control limits, whichever is more stringent, indicates an out of control procedure, and the appropriate actions required in Section 14 will be taken.

For calibration blank data a similar chart is constructed with the exception that control limits are placed at $\bar{X} \pm 2$ SD. If the result of analysis of the calibration blank falls outside the control limits, the analysis is repeated twice and the average of all three determinations is plotted. If this result is still outside the control limits, the analysis is out of control; see Section 14 for out of control procedures.

No interference has been observed in controls and environmental samples from this project to date. Interference check standards are not being routinely run since at the levels for parameters observed interference is not a problem.

14.0 Out of Control Procedures

14.1 Predetermined limits for data acceptability are incorporated in Section 13 under data precision. Standard control charts contain relevant information indicating when a process is out of control.

14.2 If a quality control procedure produces a result which indicates a measurement system is out of control, the series of actions listed in Table 2 will be initiated. The remedial action to be taken when the cause of the out of control condition is discovered is also listed.

All corrective action procedures must be reviewed and approved by supervisorial staff. A signature from one of the following staff is required. Inorganics: Ms. Jilia Nayber, Mr. Tim Scott, or Ms. Divina Pascual, Organics: Mr. Joe Bramblett, Dr. N. Hester.

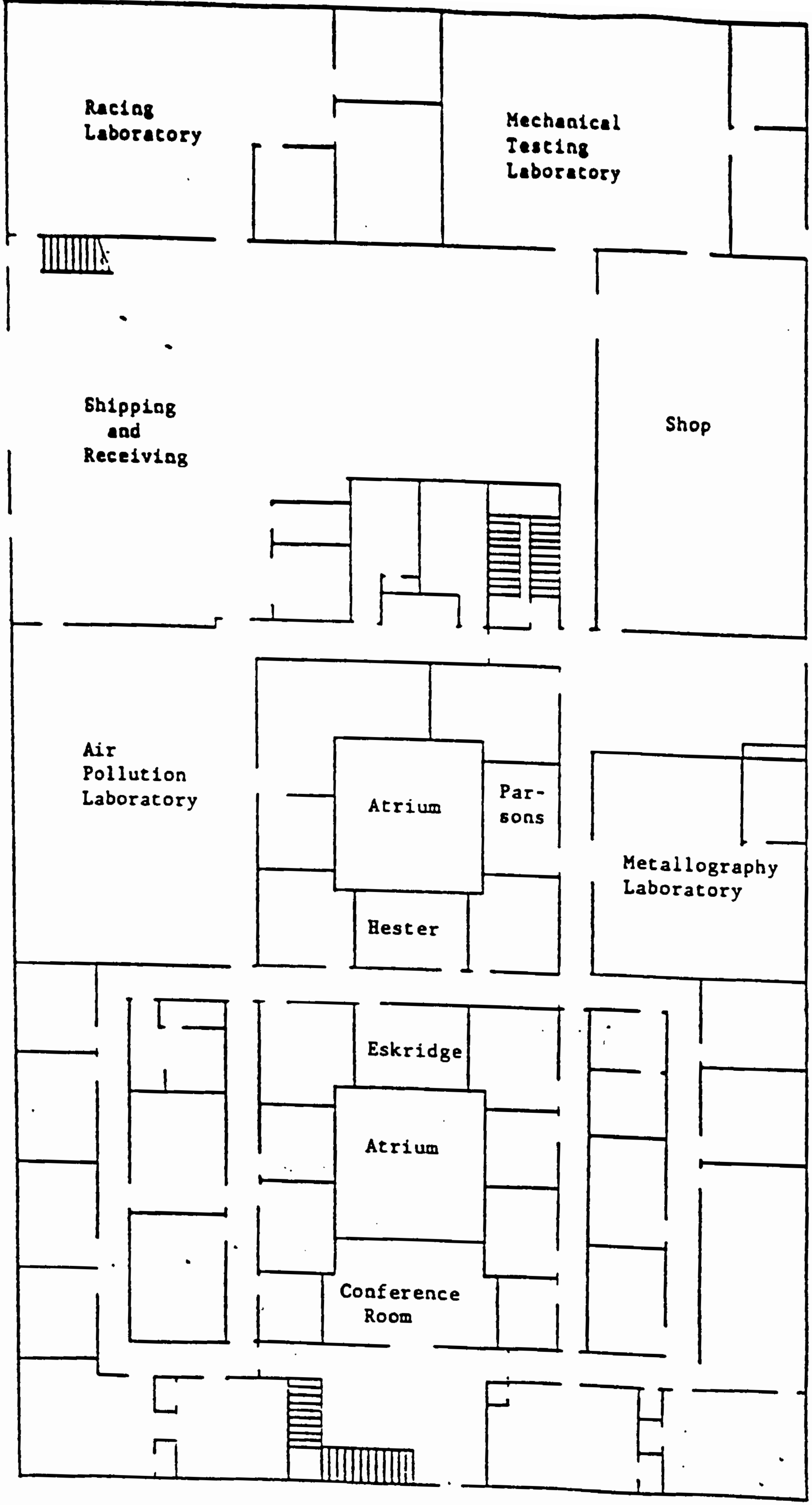
TABLE 2

OUT OF CONTROL PROCEDURES

Suspected Cause	Test	Remedial Action
Mathematical Error (Bookkeeping - right values for parameters)	Check Calculations	Correct error and continue analysis
Quality Control Check (or instrument check) Sample deviates from expected concentration	Prepare fresh Quality Control check sample and analyze	Proceed with analysis
Instrument Calibration	make new calibration standards, recalibrate reanalyze quality control check sample	Reevaluate all environmental samples just preceding bad Q.C. result. If new result deviated by more than 25% and client specification require tight precision, then reanalyze all samples since last valid Q.C. result.
Instrument Maintenance Required	Perform instrument maintenance as required in SOP manual. Perform sensitivity checks and recalibrate.	Reanalyze all samples since last valid Q.C. result

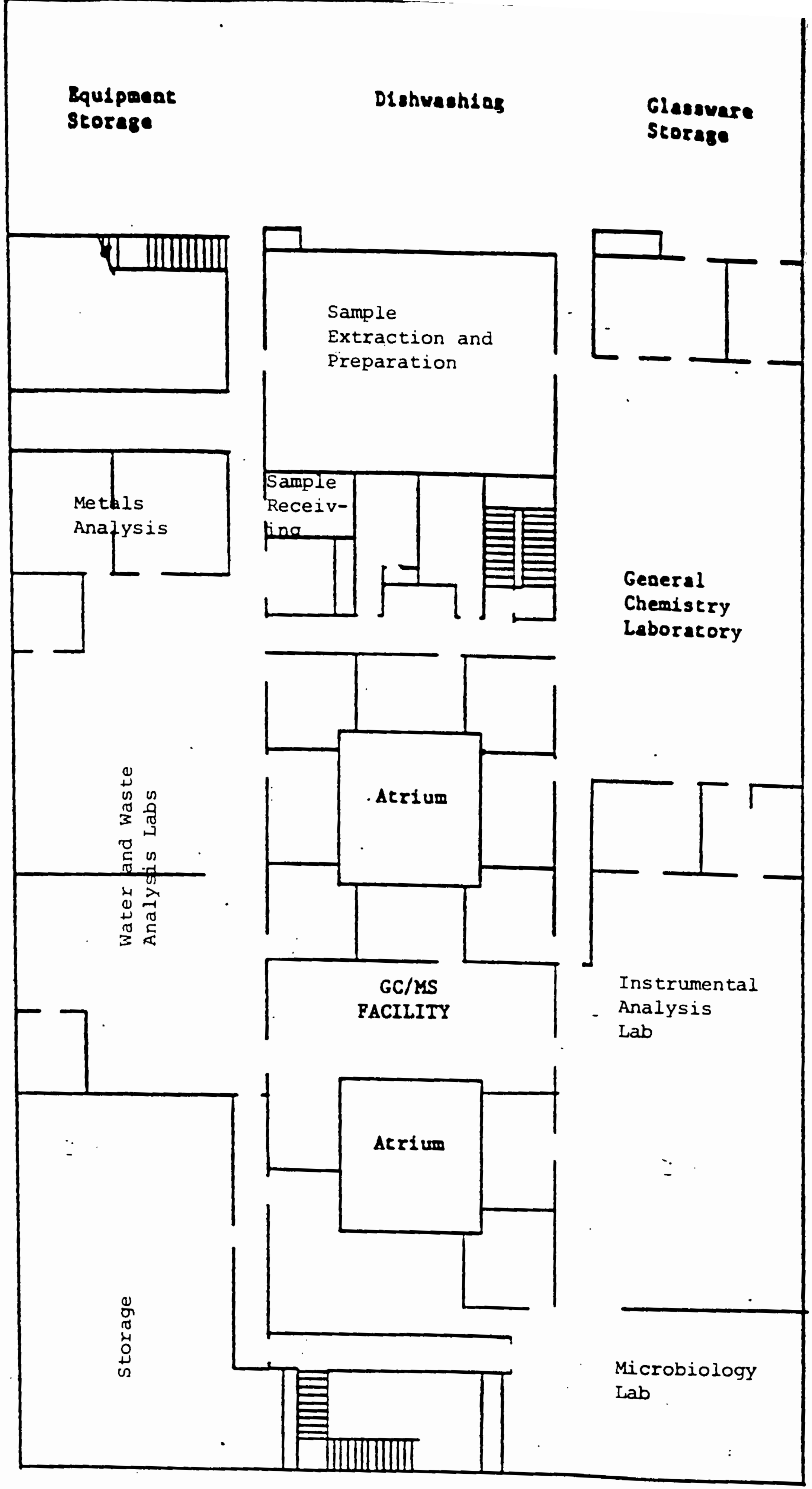
15.0 Quality Assurance Reports to Management

15.1 The quality assurance manager will prepare monthly reports to upper management which include an assessment of data accuracy, precision, and completeness derived from monthly summaries of standard control charts. Results of performance and system audits will be included as they become available, as well as any other information on quality assurance problems along with recommended solutions.



First Floor

Illustration 1A



Second Floor

Illustration 1B

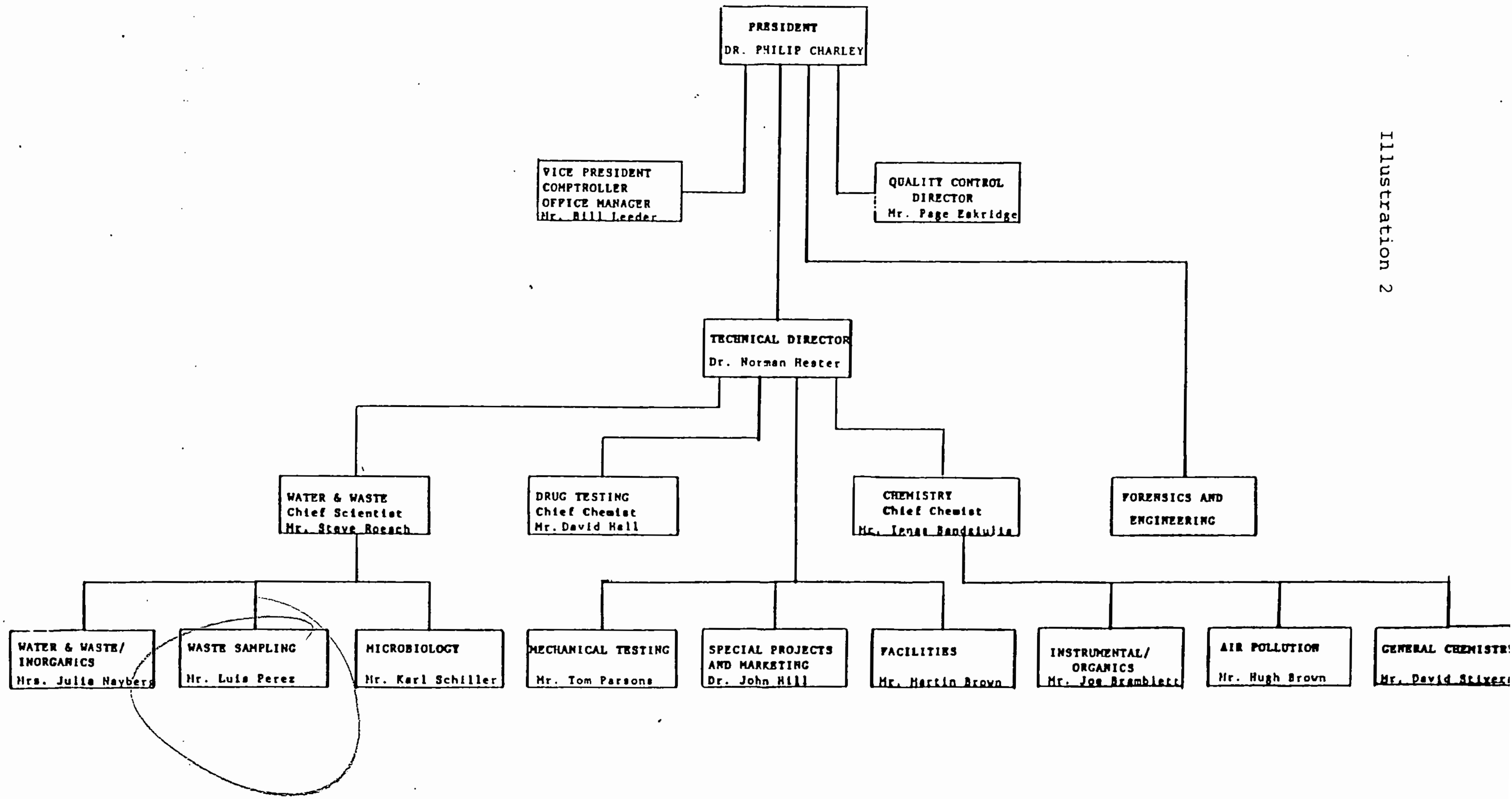


Illustration 2

TRUESDAIL LABORATORIES, INC.

4101 N. FIGUEROA ST. • LOS ANGELES, CA 90065 • (213) 225-1564

Waste Water and Drinking Water Services

PROVIDING THE MOST DIVERSIFIED LINE-UP OF TESTING SERVICES IN THE WEST!

December 12, 1985

SAMPLING INSTRUCTIONS FOR CDM/STRINGFELLOW PLANT

Bottle Type		Analysis	Sample Storage
A		E.P.A. 608 & 625	Full bottle; Refrigerate @ 4° C
B		CN	Full bottle; Refrigerate @ 4° C
C		Metals	Full bottle; Refrigeration not required
D	(For Sludge)	Radioactivity, Metals, Solids	3/4 Jar; Refrigeration not required
E		Radioactivity	Full bottle; Refrigeration not required
Vial		E.P.A. 601 & 602	Fill vial just to overflowing in such a manner so that no air bubbles pass through as sample is being filled. Seal bottle so that no air bubbles are entrapped in it. Refrigerate at time of collection at 4° C

Notes:

1.) When placing sample in specific container, please record "Sample ID" and "Date" on Bottle Tag.

2.) Preservatives have been added in accordance with E.P.A. standards to Bottles B & C.

3.) For sample pick-up, please contact Thomas Brown (Ext. 204) or Julia Nayberg (Ext. 205) at Truesdail Laboratories (714) 730-6239.

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS								REMARKS

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3– 0605

TRUESDAIL LABORATORIES, INC.
ESTABLISHED 1931
(714) 730-6239
(213) 225-1564
LABORATORIES & FORENSIC SCIENCE

Nº 10[illegible]

Illustration 5

Client: ______________________ Lab No.: __________

Address: ______________________ Date: __________

______________________ P. O. No.: __________

Attention: ______________________ Phone: __________

Sample: ______________________

____

____

Employee Entering Sample: ______________________ Phone Ext. __________

Investigation: ______________________

____

____

____

Price Estimated __________

ACCOUNTING AND INVOICE DATA

Prepared By __________ Date __________ Invoice No. __________

No.	Description or Test	$/hr. or $/ea.		Group*
____	______________________	@ ______	= $ ______	____
____	______________________	@ ______	= $ ______	____
____	______________________	@ ______	= $ ______	____
____	______________________	@ ______	= $ ______	____
____	______________________	@ ______	= $ ______	____
	Mileage ______ mi. @ ______		= $ ______	____
Misc.	______________________		= $ ______	____
Materials	______________________	Cost + 10%	= $ ______	____
Comments	______________________	TOTAL	= $ ______	____

____

* Groups 1 = Air Pollution, 2 = Microbiology, 3 = Chemistry, 4 = Water, 5= Racing, 6 = Instrumental, 7= Engineering, 8 = Mechanical Testing

FOR SERVICES

llent________________________________ Lab No.____________

________________________________ Date____________

:mployee Requesting Service________________________________ Phone Ext.____________

.egal Claim/Case No.________________________________

Services Desired________________________________

____

____

Special Instructions________________________________

____

____

ACCOUNTING DATA

epared By____________ Date____________ Invoice No.____________

Description or Test		$/hr. or $/ea.		No.			Group*
____________	@	____________	X	____________	= $	____________	______
____________	@	____________	X	____________	= $	____________	______
____________	@	____________	X	____________	= $	____________	______
____________	@	____________	X	____________	= $	____________	______
____________	@	____________	X	____________	= $	____________	______
Mileage ____________	@	____________			= $	____________	______
Misc. / Photos ____________					= $	____________	______
Materials ____________				Cost + 10%	= $	____________	______
Comments ____________				TOTAL	= $	____________	

____

Groups* 1 = Air Pollution, 2 = Microbiology, 3 = Chemistry, 4 = Water, 5 = Racing, 6 = Instrumental, 7 = Engineering, 8 = Mechanical Testing

TRUESDAIL LABORATORIES, INC.

ILLUSTRATION 7

CLIENT ______________________ DATE RECEIVED ______________
LABORATORY NO. ______________

ATTENTION ______________________
SAMPLE ______________________
P. O. NO.
INVESTIGATION: Purgeable Organics (Volatiles) by GC-HECD AND GC-PID (E.P.A. 601-602)

RESULTS

CONSTITUENT	APPROXIMATE DETECTION LIMIT*		COMPOUNDS DETECTED**
Benzene	0.5	ug/l	
Bromodichloromethane	0.5	ug/l	
Bromoform	0.5	ug/l	
Bromomethane	0.5	ug/l	
Carbon tetrachloride	0.5	ug/l	
Chlorobenzene	0.5	ug/l	
Chloroethane	0.5	ug/l	
2-Chloroethylvinyl ether	1.0	ug/l	
Chloroform	0.5	ug/l	
Chloromethane	0.5	ug/l	
bis (2-Chloroethyl) ether	0.5	ug/l	
Dibromochloromethane	0.5	ug/l	
1,2-Dichlorobenzene	0.5	ug/l	
1,3-Dichlorobenzene	0.5	ug/l	
1,4-Dichlorobenzene	0.5	ug/l	
Dichlorodifluoromethane	0.5	ug/l	
1,1-Dichloroethane	0.5	ug/l	
1,2-Dichloroethane	0.5	ug/l	
1,1-Dichloroethene	0.5	ug/l	
trans-1,2-Dichloroethene	0.5	ug/l	
1,2-Dichloropropane	0.5	ug/l	
cis-1,3 Dichloropropene	0.5	ug/l	
trans-1,3-Dichloropropene	0.5	ug/l	
Ethyl benzene	0.5	ug/l	
Methylene chloride	1.0	ug/l	
Methyl Ethyl Ketone	1.0	ug/l	
Methyl Isobutyl Ketone	1.0	ug/l	
1,1,2,2-Tetrachloroethane	0.5	ug/l	
Tetrachloroethene	0.9	ug/l	
Toluene	0.9	ug/l	
1,1,1-Trichloroethane	0.5	ug/l	
1,1,2-Trichloroethane	0.5	ug/l	
Trichloroethene	0.5	ug/l	
Trichlorofluoromethane	0.5	ug/l	
Vinyl chloride	1.0	ug/l	
Xylenes	0.5	ug/l	

*Detection limits may vary with the type of sample and with the concentrations of other species present.

** ND = Not detected; below detection limit.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Client: CDM
Attention:
Sample ID: ____________
Truesdail Sample Code: ____________

Date Sampled: ____________
Date Received: ____________
Date Reported: ____________
Project Manager: Julia Nayberg

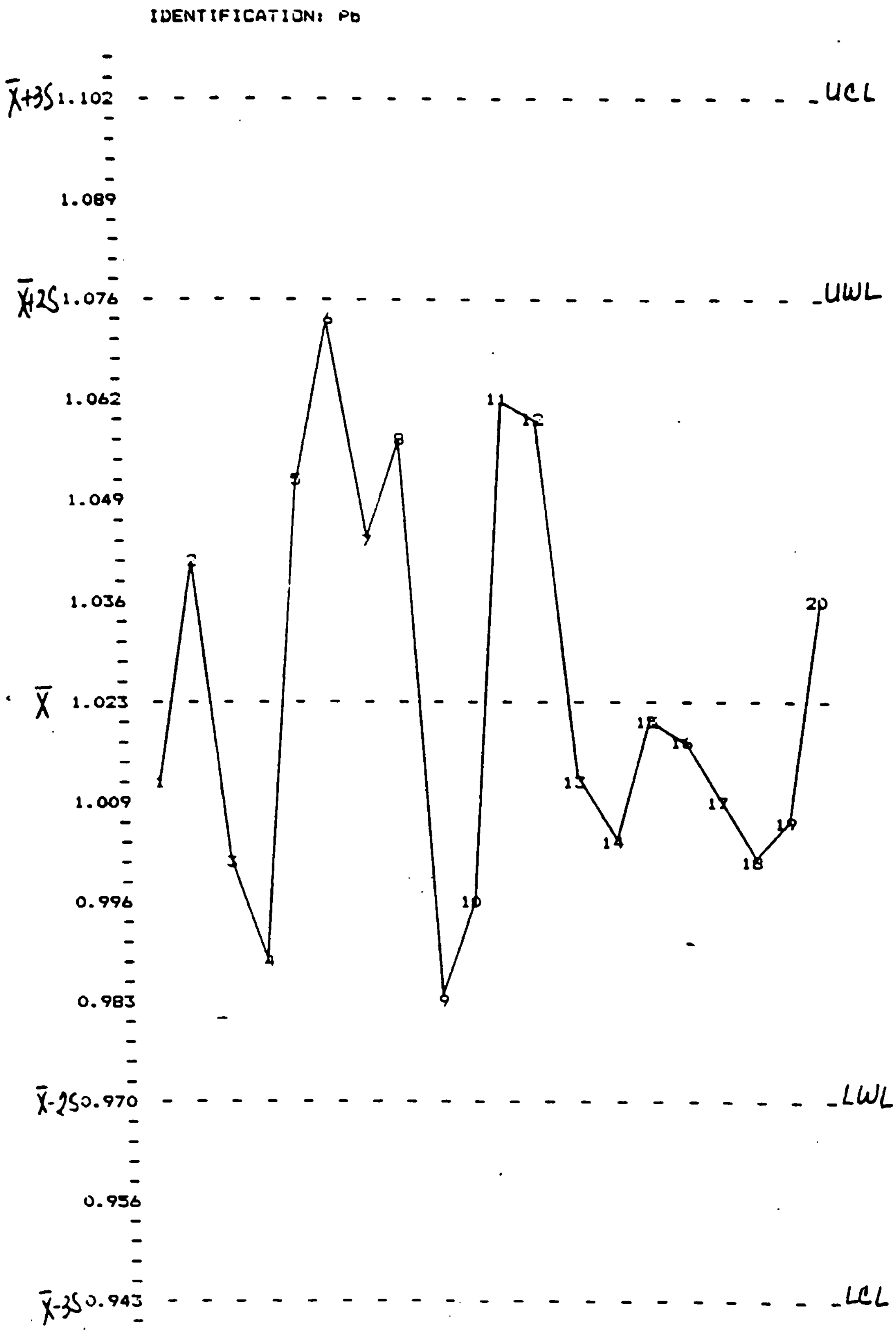
ANALYTICAL REPORT FOR WATERWASTE SAMPLES

R

Compounds	Units	Value*	LOD	Maximum Concentration Limits / mg/l
As	mg/1	______	0.30	2.0
Cd	mg/l	______	0.020	0.064
Cr (Total)	mg/l	______	0.020	2.0
Cr VI	mg/1	______	0.010	-
Cu	mg/l	______	0.025	3.0
Pb	mg/l	______	0.10	0.58
Hg	mg/l	______	0.001	0.03
Ni	mg/l	______	0.025	3.51
Ag	mg/l	______	0.025	0.43
Zn	mg/l	______	0.020	0.70

Purgeable organics (volatiles)________ 1 ppb
(E.P.A. 601-602)

LOD - Limit of Detection in mg/l
ND - Less than LOD
NA - Not analyzed
* - Values expressed in mg/l


IDENTIFICATION: Pb
X̄+3S 1.102
UCL
1.089
X̄+2S 1.076
UWL
1.062
1.049
1.036
X̄ 1.023
1.009
0.996
0.983
X̄-2S 0.970
LWL
0.956
X̄-3S 0.943
LCL
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

ACCURACY PERFORMANCE

IDENTIFICATION: Pb

Upper Control Limit (UCL)	=	1.102
Upper Warning Limit (UWL)	=	1.076
Mean	=	1.023
Lower Warning Limit (LWL)	=	0.970
Lower Control Limit (LCL)	=	0.943
Standard Deviation	=	0.026

Index	Analysis Value
(1)	1.011
(2)	1.041
(3)	1.000
(4)	0.987
(5)	1.051
(6)	1.072
(7)	1.042
(8)	1.056
(9)	0.981
(10)	0.995
(11)	1.061
(12)	1.059
(13)	1.010
(14)	1.004
(15)	1.019
(16)	1.016
(17)	1.007
(18)	1.000
(19)	1.005
(20)	1.034

QC Report

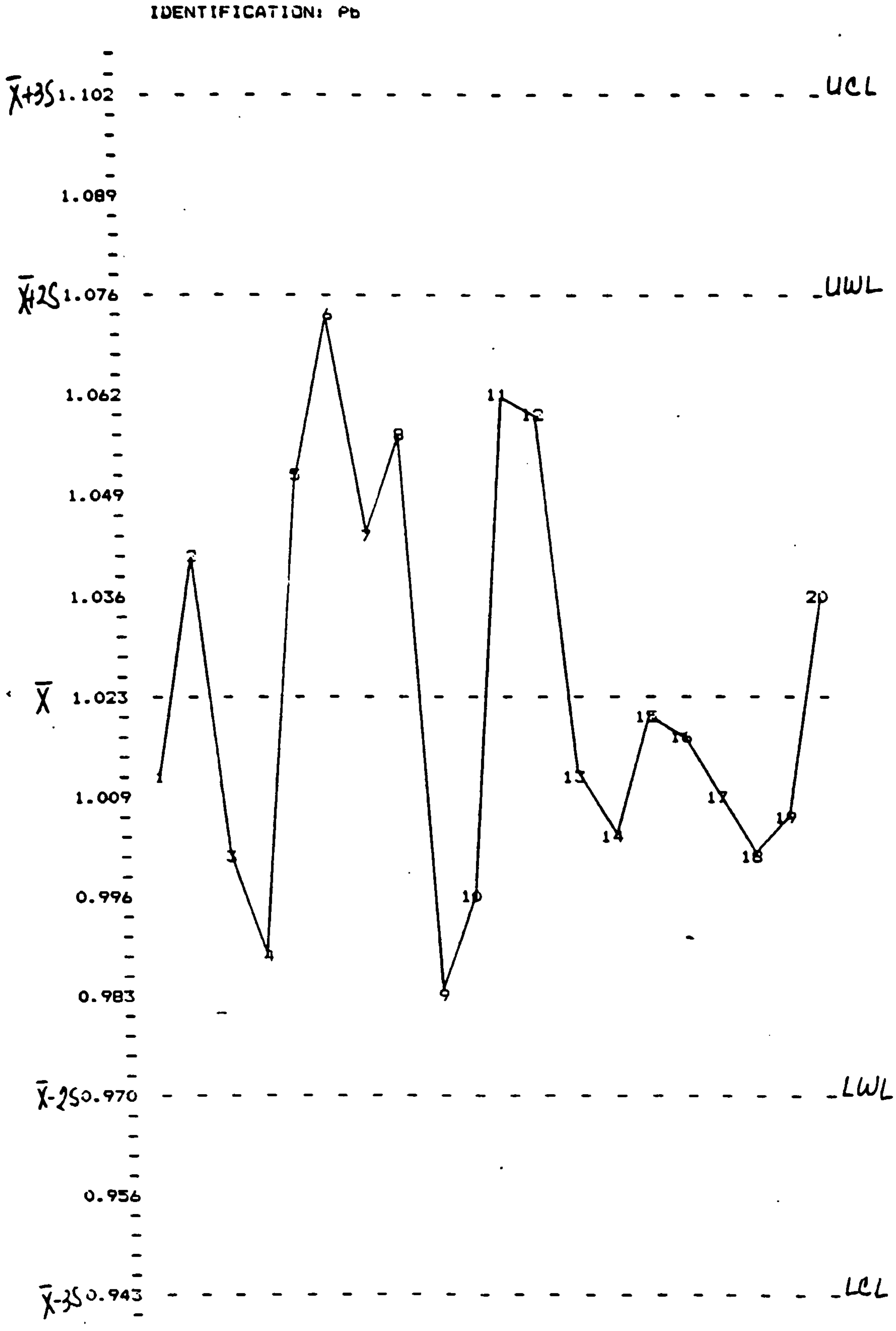
07-16-1987

Lab N	Anal D	Ele	Compound	TruVal	AnalVal	Method	Instrument	Ana
15039	870701	Pb		1.00	1.035		icp	
15039	870701	Pb		1.00	1.100		icp	
15040	870702	Pb		1.00	1.03		icp	
15040	870702	Pb		1.00	1.007		icp	
15041	870706	Pb		1.00	1.106		icp	
15041	870706	Pb		1.00	1.158		icp	
15042	870707	Pb		1.00	1.116		icp	
15042	870707	Pb		1.00	1.135		icp	
15043	870708	Pb		1.00	.997		icp	
15043	870708	Pb		1.00	.998		icp	
15044	870709	Pb		1.00	1.078		icp	
15044	870709	Pb		1.00	1.131		icp	
15045	870710	Pb		1.00	1.04		icp	
15045	870710	Pb		1.00	1.045		icp	
[illegible]047	870713	Pb		1.00	1.035		icp	
15047	870713	Pb		1.00	1.03		icp	
15048	870714	Pb		1.00	.983		icp	
15048	870714	Pb		1.00	.970		icp	
15050	870715	Pb		1.00	1.04		icp	
15050	870715	Pb		1.00	1.101		icp	

TOTAL

Printed 20 of the 1018 records.

?


IDENTIFICATION: Pb
$\bar{X}+3S$ 1.102
1.089
$\bar{X}+2S$ 1.076
1.062
1.049
1.036
$\bar{X}$ 1.023
1.009
0.996
0.983
$\bar{X}-2S$ 0.970
0.956
$\bar{X}-3S$ 0.943
UCL
UWL
LWL
LCL
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

ACCURACY PERFORMANCE

IDENTIFICATION: Pb

Upper Control Limit (UCL)	=	1.102
Upper Warning Limit (UWL)	=	1.076
Mean	=	1.023
Lower Warning Limit (LWL)	=	0.970
Lower Control Limit (LCL)	=	0.943
Standard Deviation	=	0.026

Index	Analysis Value
(1)	1.011
(2)	1.041
(3)	1.000
(4)	0.987
(5)	1.051
(6)	1.072
(7)	1.042
(8)	1.056
(9)	0.981
(10)	0.995
(11)	1.061
(12)	1.059
(13)	1.010
(14)	1.004
(15)	1.019
(16)	1.016
(17)	1.007
(18)	1.000
(19)	1.005
(20)	1.034

Illustration 9C

QC Report

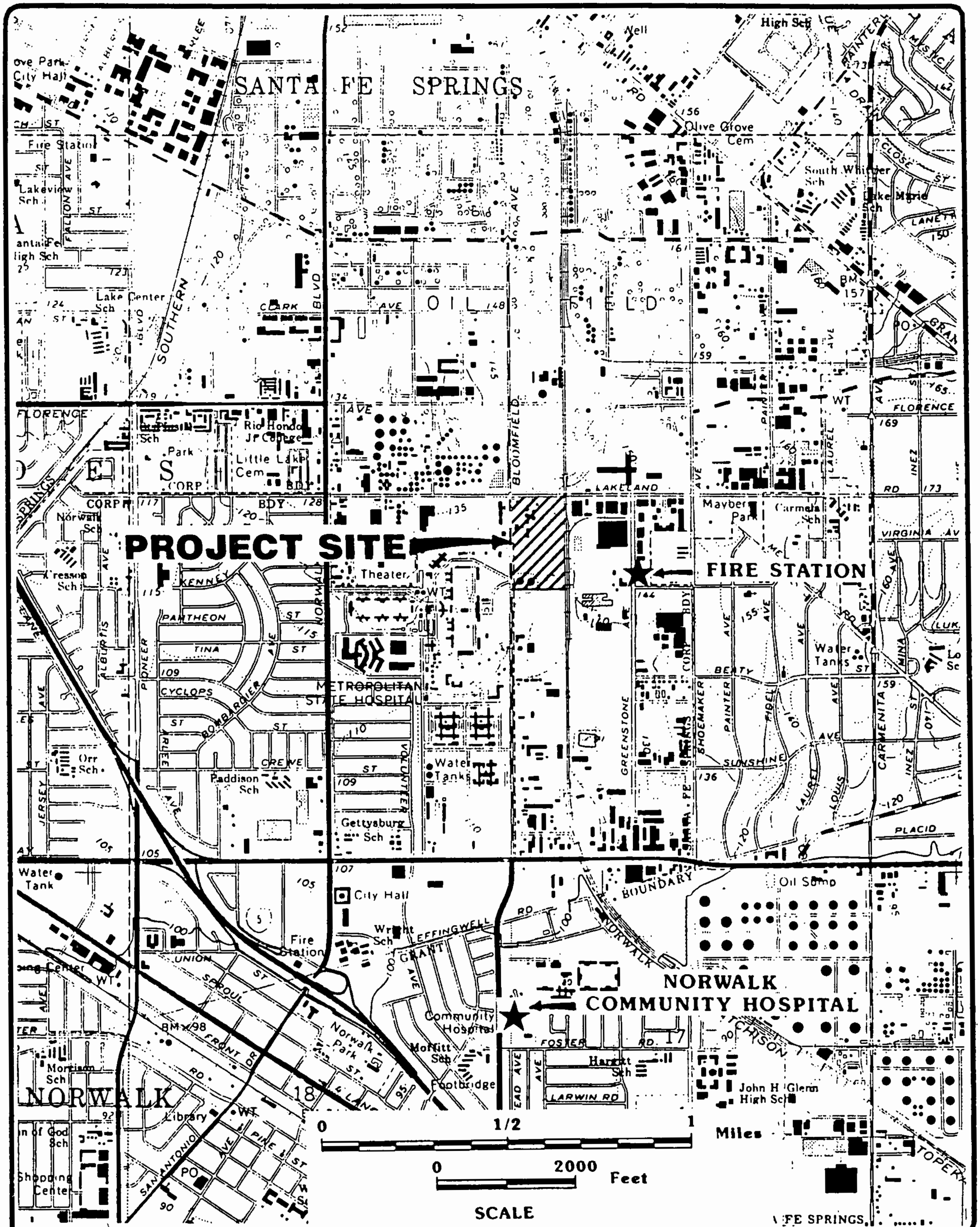
07-16-1987

Lab N	Anal D	Ele	Compound	TruVal	AnalVal	Method	Instrument	Ana
15039	870701	Pb		1.00	1.035		icp	
15039	870701	Pb		1.00	1.100		icp	
15040	870702	Pb		1.00	1.03		icp	
15040	870702	Pb		1.00	1.007		icp	
15041	870706	Pb		1.00	1.106		icp	
15041	870706	Pb		1.00	1.158		icp	
15042	870707	Pb		1.00	1.116		icp	
15042	870707	Pb		1.00	1.135		icp	
15043	870708	Pb		1.00	.997		icp	
15043	870708	Pb		1.00	.998		icp	
15044	870709	Pb		1.00	1.078		icp	
15044	870709	Pb		1.00	1.131		icp	
15045	870710	Pb		1.00	1.04		icp	
15045	870710	Pb		1.00	1.045		icp	
15047	870713	Pb		1.00	1.035		icp	
15047	870713	Pb		1.00	1.03		icp	
15048	870714	Pb		1.00	.983		icp	
15048	870714	Pb		1.00	.970		icp	
15050	870715	Pb		1.00	1.04		icp	
15050	870715	Pb		1.00	1.101		icp	

TOTAL

Printed 20 of the 1018 records.

117149



EMCON Associates

WALKER PROPERTIES
11102 BLOOMFIELD AVE.
SANTA FE SPRINGS, CALIFORNIA

SITE LOCATION MAP

FIGURE 7.1

PROJECT NO. B15-01.01

7.0 HEALTH AND SAFETY PLAN

7.1 INTRODUCTION

The Health and Safety Plan (HASP) presented in this document is based on current Occupational Safety and Health Administration (OSHA) regulations as presented in 29 Code of Federal Regulations (CFR) 1910.120 as amended by the notice of proposed rule making published in the Federal Register (F.R. Vol. 52 No. 153, 29619-29654, August 10, 1987) an evaluation of existing data derived from previous assessments of site characteristics. This plan addresses all those worker and community health and safety concerns and activities associated with the Walker Properties site project, and will be implemented during all phases of on-site work. Compliance with this HASP is required of all EMCON personnel, subcontractors and third parties who enter this site. The requirements and parameters identified in this HASP may be subject to modification as warranted by existing site conditions or as work progresses. However, no changes will be made without the prior approval of the project Health and Safety Officer.

7.2 SITE HISTORY AND BACKGROUND INFORMATION

The Walker Properties site is located at 11102 Bloomfield Avenue, Santa Fe Springs, in Los Angeles County, California. Figure 7.1 shows the site location at the intersection of Bloomfield Avenue and Lakeland Road within the community of Santa Fe Springs.

The project site consists of 22 acres which were originally developed by Getty Oil for the handling and storage of hydrocarbon products. During its operation as a hydrocarbon handling and storage facility, drilling fluids were reportedly discarded into on-site sumps.

The site was graded in 1967. Mud and debris were excavated from the sumps and spread on site to promote drying. Air dried sump contents were then blended with clean soil and graded to final site contours. In addition, a topographic depression on the eastern portion of the site which served as a surface water drainage course was replaced with a 42-inch diameter pipe and covered to the final grade.

According to the Expenditure Plan for the Hazardous Substance Cleanup Bond Act of 1984 (Revised January, 1988), investigations performed in 1986 show that soil in the eastern portion of the site (the former drainage area - see Parcel 1 in Figure 2.2), previously reported to have high concentrations of barium and lead, does not have significant levels of contamination. These findings were supported by additional soil sampling and analysis performed by EMCON in 1988, so no further investigation of Parcel 1 will be performed. However, elevated concentrations of lead and polychlorinated biphenyls (PCBs) have been detected in soil samples collected near storage tanks situated in the northern portion of the site (see Parcel 3 in Figure 2.2). Explosive concentrations of hydrocarbon vapors have also been detected in the vadose zone beneath the property.

7.3 KEY PERSONNEL AND ASSIGNMENT OF RESPONSIBILITIES

7.3.1 Project Manager

The Project Manager has overall project responsibility for the development, coordination and implementation of the Walker Properties RI/FS Workplan in a safe manner and is the primary contact with the client and the regulatory agencies. This will include supervising the Site Manager and consulting with the Health and Safety Officer and Site Health and Safety Coordinator regarding the Workplan and any changes that may affect the health and safety of the field team members. The Project Manager for this project is Bonnie Teaford, P.E.

7.3.2 Health and Safety Officer

The Health and Safety Officer has overall project responsibility for development, coordination and implementation of the Walker Properties site HASP and its conformance with the EMCON Associates Health and Safety Program. This will include the medical surveillance program, training requirements, monitoring procedures, etc. The Health and Safety Officer shall coordinate with the Project Manager, Site Manager and Site Health and Safety Coordinator on all modifications to the site HASP and will be available for consultation as required. The Health and Safety Officer will periodically be on site during the investigation and will ensure that the Site Health and Safety Coordinator is familiar with all aspects of the site HASP. The Health and Safety Officer for this project is Charles F. Russ, Ph.D, R.E.A., CHMM.

7.3.3 Site Manager

The Site Manager is responsible for implementing the steps of the Workplan and site HASP, supervising the field team members and consulting with the Site Health and Safety Coordinator regarding the Workplan and any changes that may affect the health and safety of field team members. The Site Manager for this project is Ken Patton with backup from Robert Baker.

7.3.4 Site Health and Safety Coordinator

The Site Health and Safety Coordinator is responsible for ensuring compliance with all aspects of the site HASP including health and safety procedures for hazardous waste sites, field training, exposure monitoring, personal protective equipment and clothing, audits, and consulting with the Health and Safety Officer regarding the HASP. The Site Health and Safety Coordinator for this project is Tim Hiltner.

7.3.5 Team Members

Field team members are responsible for understanding and adhering to the site HASP. All team members should be alert to any unsafe practices which may affect their own safety. Serious safety deficiencies should be communicated to the Site Health and Safety Coordinator. If a team member's safety is threatened by the activity of others, it is recommended that the Health and Safety Coordinator, Project Manager, Site Manager or Health and Safety Officer be contacted immediately.

7.3.6 Sub-Contractors and Third Parties

All equipment operators, laborers and other third parties will be responsible for understanding and complying with all site safety requirements. EMCON will maintain overall responsibility for site safety, air monitoring, decontamination and hygiene. However subcontractors and third parties engaged in work at this site will be required to provide their own work equipment and personal protective gear. Employees of Subcontractor and third parties will also be required to provide EMCON with documentation of participation an employer medical surveillance program and that they have completed an OSHA required 40-hour training program (and annual refresher coarse if appropriate) prior to working at this site.

7.4 WALKER PROPERTIES JOB HAZARD ASSESSMENT

Laboratory analyses of soil samples collected from the site during previous investigations indicate that various chemicals are present in soil at the site. These chemicals, as shown in Table 7.1, include metals, polychlorinated biphenyls (PCBs), volatile organics, and polynuclear aromatic hydrocarbons. Concentrations of these substances found in soil at the site are shown in Tables 2.1 through 2.4. Table 7.2 presents a hazard summary of Threshold Limit Values (TLVs) or

Permissible Exposure Limits (PELs); routes of exposure, acute exposure symptoms and odor thresholds for each chemical identified in Table 7.1.

The TLVs and PELs identified in Table 7.2 are defined as the time weighted average concentrations in air for a normal 8-hour workday and a 40-hour work week, to which nearby all workers may be repeatedly exposed, day after day, without adverse effect. TLVs are recommended limits established by the American Conference of Governmental Industrial Hygienists "based on the best available information from industrial experience, from experimental human and animal studies, and, when possible, from a combination of the three" (ACGIH; 1988, Threshold Limit Values and Biological Exposure Indices for 1988-1989). PELs are legally enforceable exposure limits codified by regulation (29 CFR, 1910 and California Code of Regulation, Title 8).

The physical and chemical hazards anticipated while on site are associated with the demolition of structures; above ground tank sampling; sump sampling and excavation; soil boring, sampling and excavation; heavy equipment operation; traffic; biological hazards; heat stress; and noise.

Prior to beginning site work at Walker Properties, the Underground Service ~~Alert (USA)~~ will be contacted by calling (800)642-2444 for guidance regarding underground utilities and right of ways. Prior to drilling any soil borings, the boring locations will be surveyed using geophysical equipment to prevent drilling through metallic underground obstructions.

7.4.1 Structure Demolition

Several buildings, foundations, tanks, sumps and other structures are currently present at the site. Many of these structures will require demolition prior to the commencement of the remedial investigation. Properly licensed contractors will be used to perform the demolition.

TABLE 7.1

CHEMICALS DETECTED IN SOIL SAMPLES
COLLECTED AT THE WALKER PROPERTIES SITE

Metals
Barium
Copper
Lead

Max level / mean SD, etc ?

Polychlorinated Biphenyls
Arochlor 1242
Arochlor 1248
Arochlor 1260

Volatile Organics
1,1-Dichloroethane
1,1,1-Trichloroethane
Trichloroethylene
Perchloroethylene
Toluene
Ethylbenzene
Xylenes

8010

8020

Polynuclear Aromatic Hydrocarbons 8310
Napthalene
Fluorene
Phenanthrene
Anthracene
Fluoranthene
Pyrene
Benzo(a)pyrene

Source: Dames & Moore 1985 and 1986.

PJB/B150101.DOC

TABLE 7.2

WALKER PROPERTIES SITE HAZARD SUMMARY

Analytes	TLV/PEL (1,2,3,4)	Routes of Exposure (4,5,6)	Acute Exposure Symptoms (4,5,6)	Odor Threshold (4,5,6)
levels found ?, max, $\bar{x}$, SD, etc.				
Metals				
Barium	0.5 mg/m^3	Dermal, oral	Dermal and nasal irritation, dyspnea, severe abdominal pain, vomiting, CNS effects	---
Copper	1 mg/m^3	Oral, inhalation, dermal, occular	Vomiting, gastric pain, dizziness, exhaustion cramps, metal taste	odorless
Lead	0.05 mg/m^3	Oral, dermal, inhalation	Lassitude, pallor, abdominal pain	---
Polychlorinated Biphenyls	from Title 8 ? CFR 29 .5 to 1 mg/M3 = PEL based on Cl % !			
Arochlor 1242*	1 ug/m^3	Oral, inhalation, dermal	Irritates skin and eyes, chloroachne, nausea, vomiting, edema, abdominal pain, liver damage	---
Arochlor 1248*	1 μg/M3 = NIOSH? = .001 mg/M3 ! 1 ug/m^3	Oral, inhalation, dermal	Irritates skin and eyes, chloracne, nausea, vomiting, edema, abdominal pain, liver damage	---
Arochlor 1260*	1 ug/m^3	Oral, inhalation, dermal	Irritates skin and eyes chloracne, nausea, vomiting, edema, abdominal pain, liver damage	---
Volatile Organics				
1,1-Dichloroethane	100 ppm	Inhalation, dermal	CNS Depression, skin irritation, drowsiness, unconsciousness	---
1,1,1-Trichloroethane (methyl chloroform)	350 ppm	Inhalation, dermal	Headache, lassitude, CNS depression, poor equilibrium, skin and eye irritation, cardiac arrythmia	---

TABLE 7.2 (CONT.)

WALKER PROPERTIES SITE HAZARD SUMMARY

Analytes	TLV/PEL (1,2,3,4)	Routes of Exposure (4,5,6)	Acute Exposure Symptoms (4,5,6)	Odor Threshold (4,5,6)
<u>Volatile Organics</u> (Cont.)				
Trichloroethylene*	50 ppm	Inhalation, dermal	Vertigo, visual disturbance, tremors, somnolence, nausea, vomiting, eye and skin irritation, cardial arrythmia	---
Perchloroethylene* (tetrochloroethylene)	50 ppm	Inhalation, dermal, occular	Irritates eyes, nose, throat, nausea, flushes face and neck, vertigo, dizziness, incoherence, headache	4.68 ppm
Ethylbenzene	100 ppm	Inhalation, dermal, occular	Irritates eyes and mucous membranes, headache, dermatitis, narcotic, coma	---
Toluene	100 ppm	Inhalation, dermal	Mucous membrane irritation, fatigue, nausea dizziness, insomnia, prickling sensation of skin	2-3 ppm
Xylene	100 ppm	Inhalation	Dizziness, excitement, irritation of eye, nose and throat, dermatitis	1.1 ppm
<u>Polynuclear Aromatic Hydrocarbons</u>				
Naphthalene	10 ppm	Inhalation, oral, skin	Eye irritant, headache, confusion, excitement, malaise, nausea, vomiting, abdominal pain	---
Fluorene	---	Dermal, oral inhalation	Irritates skin, eyes, mucous membranes, inhalation	---
Phenathrene	---	Dermal, oral, inhalation	Irritates skin, eyes, mucous membranes, skin photosensitizer	---
Anthracene	---	Dermal, oral inhalation	Irritates skin, eyes, mucous membranes,	---

TABLE 7.2 (CONT.)

WALKER PROPERTIES SITE HAZARD SUMMARY

Analytes	TLV/PEL (1,2,3,4)	Routes of Exposure (4,5,6)	Acute Exposure Symptoms (4,5,6)	Odor Threshold (4,5,6)
<u>Polynuclear Aromatic Hydrocarbons</u> (Cont.)				
Fluoranthene	---	Dermal, oral inhalation	Irritates skin, eyes, mucous membranes	---
Pyrene	---	Dermal, oral inhalation	Irritates skin, eyes, mucous membranes	---
Benzo(a)pyrene*	Carcinogen	Dermal, oral inhalation	Irritates skin, eyes, mucous membrane	---

* Known/suspected carcinogen

1. American Conference of Government Industrial Hygienists, 1987. Threshold Limit Values and Biological Exposure Indices for 1987-1988. Cincinnatti, Ohio.
2. 29 Code of Federal Regulations 1910.1000 July 1, 1987.
3. California Code of Regulations, Title 8, Section 5155 Table AC-1.
4. National Institute for Occupational Safety and Health, 1985. Pocket Guide to Chemical Hazards, DHHS (NIOSH) Publication No. 85-114, Second Printing-February.
5. Dangerous Properties of Industrial Materials, Sax, N. I. 1984. Van Nostrand Reinold Company, Inc., Publishers.
6. U.S. Department of Transportation/U.S. Coast Guard, 1985. Chemical Hazard Response Information System (CHRIS) Hazardous Chemical Data, Volume II. Commandant Instruction N.16465.12A. June.

Structure demolition in areas of known or suspected contamination will be conducted using Level C protection including:

- Dual cartridge full face air purifying respirators (APRs) with organic vapor/acid gas/ High Efficiency Particulate Air (HEPA) filter cartridges (MSHA/NIOSH approved)
- Hooded chemrel, polyethylene or Saranex coated Tyvek coveralls
- Chemical resistant safety boots with steel toe and shank
- Hard hats
- Sol-Vex outer and vinyl inner gloves

See Table 7.4

In the event that organic vapors are encountered above action levels (see Section 7.6) during ambient air monitoring, contractor crews will continue demolition using Level B protection, which will include: > 5 ppm above BG

- Pressure demand self contained breathing apparatus (SCBA) or supplied air respirators (MSHA/NIOSH approved)
- Hooded polyethylene or Saranex coated Tyvek coveralls
- Chemical resistant safety boots with steel toe and shank
- Chemical resistant over boots
- Sol-Vex outer and vinyl inner gloves
- Hard hat

7.4.2 Above Ground Tank Sampling

TANKS

Two empty above ground storage tanks, one containing crude oil residues (Tank #1 shown on Figure 4.1) and the other containing jet fuel residue (Tank #2 shown on Figure 4.1), are located in Parcel 2 of the site. Three other above ground storage tanks, formerly used to store waste oils, are located in Parcel 3. The present contents and volume of materials contained in the Parcel 3 are unknown. Level B protection (see Section 7.4.1) will be used during sampling of these above ground tanks. These above ground tanks will be sampled through inspection parts on the tank surface using procedures identified in SW-846 (U.S. EPA, 1986, Test Methods for Evaluating Solid Waste, 3rd. ed., Vol. 11.) to avoid conducting a confined space entry.

The following procedures will be used when sampling the above ground tanks at Walker Properites:

- Employees not involved in tank sampling will stay at a safe distance (>150 feet) from the work site and positioned up wind of the sampling crew.
- Employee involved in tank sampling will be tethered on a winch mounted shoulder harness.
- Employees monitoring the winch and tether line will maintain visual and voice contact with sampler for the duration of the sampling event.
- Monitoring will be done continuously with an explosimeter, HNu, Photovac or OVA-FID during the sampling event.
- All tank inspection parts are accessible from ground level, therefore ladders, etc. will not be required to obtain samples.
- The nearest local Fire Station located at 11300 Greenstone Avenue, Santa Fe Springs, California 90670, (213)944-9713 will be notified prior to tank sampling.

7.4.3 Sump Sampling and Excavations

Two sumps containing oils, greases, wash water and sludges from a vehicle washdown area are located on Parcel 3 of the site. Level C protection (see Section 7.4.1) will be used during sampling, evacuation and excavation of these sumps. During monitoring, if organic vapors are detected above action levels (as specified in Section 7.6) Level B protection (see Section 7.4.1) will be used.

The following procedures will also be used when sampling and excavating sumps at the Walker Properties site:

SUMPS

- Employees not involved in sampling, evacuation or excavation of sumps will stay at a safe distance (>150 feet). Employees involved in sump operations will be positioned upwind.

- Monitoring will be done continuously with an explosimeter, HNu, Photovac or OVA-FID during sampling, evacuation and excavation;

- Personnel shall not stand or walk on the sump cover without proper supervision during sampling or evacuation.

- Personnel shall not stand or walk on sump cover or near trench walls during excavation.

- The nearest local Fire Station (located at 11300 Greenstone Avenue, Santa Fe Springs, California 90670 (213)944-9713) will be notified prior to sump sampling, evacuation and excavation.

7.4.4 Soil Sampling

Soil

Surface and subsurface soil samples will be taken at various locations at the site. Surface soil samples will be obtained using scoops, hand augers or hollow-stem augers, and subsurface soil samples by hollow stem auger only. Soil sampling locations and procedures are described in Chapter 4.

Based on previous soil investigations by Dames & Moore at Parcel 3, organic vapor levels in the breathing zone will warrant Level C protection (see Section 7.4.1). Level C protection will also be worn to prevent dermal exposure to contaminated dust.

Investigations at Parcel 2 by Dames & Moore found no evidence of contamination. If initial field work confirms these earlier findings, worker protection will be downgraded to Level D at this location. Level D Protection will include:

- Work overalls or other suitable work clothing
- Safety boots with steel toe and shank
- Chemical resistant gloves
- Hard hat

where ?

Dames & Moore also identified explosive concentrations of organic vapors in the vadose zone. If at any time during a drilling operation downhole organic vapor concentrations exceed 10 percent of the Lower Explosive Limit (LEL), drilling will cease. The borehole will be cleared of equipment and evacuated by blower fan until concentrations of organic vapors return to safe working levels.

7.4.5 Heavy Equipment Operation

Soil excavation at Parcels 2 and 3 will be performed using front end loaders, backhoes or other appropriate equipment. Level C protection (see Section 7.4.1) will be used during site excavation at Parcel 3. If warranted by an initial site investigation at Parcel 2, Level D will initially be used during site excavation. During monitoring (see Section 7.6) if organic vapors are detected, Level C protection (see Section 7.4.1) will be used.

7.4.6 Community Traffic

Walker Properties is located in a commercial area with little pedestrian traffic. The site is also secured with a six foot chain link fence. Access to the site is controlled by locked gates. Several gates are located on the eastern boundary of the property and another on the northern boundary. Barricades, banners or warning signs will be erected in the vicinity of the site to delineate work areas and to prevent unauthorized site entry.

7.4.7 Heat Stress

During warm weather, field operations can create a variety of hazards to the employee, particularly when he or she is wearing protective clothing. It is important to keep in mind that protective clothing can limit the dissipation of body heat and moisture. This can cause discomfort and inefficiency, resulting in an impaired physical ability which in turn increases the probability of an accident occurring. Heat cramp, heat exhaustion, or heat stroke can be experienced and, if not remedied, can threaten life or health. Therefore, it is important that all employees are able to recognize the symptoms of heat stress and are capable of arresting the problem as quickly as possible.

Heat produced within the body is brought to the surface largely by the bloodstream and escapes to the cooler surroundings by conduction and radiation. If air movement or a breeze strikes the body, additional heat is lost by convection. However, when the temperature of the surrounding air becomes equal to or raised above that of the body, all of the heat must be lost by vaporization of the moisture or sweat from the skin surface. As the air becomes more humid, vaporization from the skin slows down. Thus, on a day when the temperature is 95° to 100°F, with high humidity and little or no breeze, conditions are ideal for the retention of heat within the body. Medical emergencies due to heat are likely to occur. Such emergencies are classified in three categories: heat cramp, heat exhaustion, and heat stroke.

7.4.7.1 Heat Cramp

Heat cramp usually affects people who work in hot environments and perspire a great deal. Loss of salt from the body causes very painful cramps of the leg and abdominal muscles. Heat cramp also may result from drinking iced water or other drinks either too quickly or in too large a quantity. The symptoms of heat cramp are:

- Muscle cramps in legs and abdomen
- Pain accompanying the cramps
- Faintness
- Profuse perspiration

Should these symptoms appear, move the individual to a cool place. Give him or her sips of liquid such as Gatorade or its equivalent. Apply manual pressure to the cramped muscle. Transport the individual to a hospital if there is any indication of a more serious problem.

7.4.7.2 Heat Exhaustion

Heat exhaustion occurs in individuals working in hot environments, and may be associated with heat cramp. Heat exhaustion is caused by the pooling of blood in the vessels of the skin. The heat is transported from the interior of the body to the surface by the blood. The blood vessels in the skin become dilated and a large amount of blood is pooled in the skin. This condition, plus the blood pooled in the lower extremities when an individual is in an upright position, may lead to physical collapse. The symptoms of heat exhaustion are:

- Weak pulse
- Rapid and usually shallow breathing
- Generalized weakness

- Pale, clammy skin
- Profuse sweating
- Dizziness
- Unconsciousness

Should these symptoms appear, move the individual to a cool place and remove as much clothing as possible. Administer cool water, Gatorade, or its equivalent. If possible, fan the individual continually to remove heat by convection, but do not allow chilling or overcooling. Treat the individual for shock, and transport him or her to a medical facility if there is any indication of a more serious problem.

7.4.7.3 <u>Heat Stroke</u>

Heat stroke is a profound disturbance of the heat-regulating mechanism, associated with high fever and collapse. Sometimes this condition results in convulsion, unconsciousness, and even death. Direct exposure to sun, poor air circulation, poor physical condition, and advanced age (over 40) bear directly on the tendency to suffer heat stroke. It is a serious threat to life and carries a 20% mortality rate. Alcoholics are extremely susceptible. The symptoms of heat stroke are:

- Sudden onset
- Dry, hot and flushed skin
- Dilated pupils
- Early loss of consciousness
- Full and fast pulse
- Breathing deep at first, later shallow and even almost absent
- Muscle twitching, growing into convulsion

- Body temperature reaching 105°F to 106°F or higher

Remember that this is a true emergency. Should these symptoms appear, transportation to a medical facility should not be delayed. Move the individual to a cool environment and remove as much clothing as possible. Assure an open airway. Reduce body temperature promptly, preferably by wrapping in a wet sheet or dousing with water. If cold packs are available, place them under the arms, around the neck, at the ankles, or at any place where blood vessels that lie close to the skin can be cooled. Protect the patient from injury during convulsion, especially from tongue-biting.

7.4.7.4 Avoidance of Heat-Related Emergencies

When personnel are working on site in situations where the ambient temperatures and humidity are high, and especially in situations where protection Levels B and C are required, the Site Health and Safety Coordinator must:

- Provide adequate break periods, including refreshments for the type of work being conducted
- Establish a work schedule that will provide sufficient rotation of team members in and out of stressful situations/tasks
- Provide sufficient cooling or warming devices under protective clothing, but use caution as these layers add bulk, decrease mobility, and contribute to fatigue
- Use portable showers and hose-downs in extremely hot situations
- Use cooling vests
- Provide areas of shade on site if possible
- Revise work schedules, when necessary, to take advantage of the cooler parts of the day

If protective clothing must be worn, especially Levels B and C, the suggested guidelines for ambient temperature and maximum wearing time per excursion are:

Ambient Temperature (°F)	Max. Wearing Time per Excursion (Minutes)
Above 90	15
85 to 90	30
80 to 85	60
70 to 80	90
60 to 70	120
50 to 60	180

One method of measuring the effectiveness of an employee's rest recovery regime is by monitoring the heart rate. The "Brouha Guidelines" is one such method:

- During a 3-minute period, count the pulse rate for the last 30 seconds of the first minute, the last 30 seconds of the second ~~minute,~~ and the last 30 seconds of the third minute and then double the count.

If the recovery pulse rate during the last 30 seconds of the first minute is 100 beats/minute or less and the deceleration between the first, second, and third minutes is at least 10 beats/minute, the work-recovery regimen is acceptable. If the employee's rate is above that specified, a longer rest period is required, accompanied by an increased intake of fluids.

The frequency of heart-rate monitoring depends on the air temperature, level of work being performed, and type of protective clothing being worn. Temperatures above 70°F indicate the need for monitoring. Suggested frequencies are as follows:

Ambient Temp. (°F)	Level D	Level C
72.5 - 77.5	After 150 min of work	After 120 min of work
77.5 - 82.5	After 120 min of work	After 90 min of work
82.5 - 87.5	After 90 min of work	After 60 min of work
87.5 - 90.5	After 60 min of work	After 30 min of work
90 and above	After 45 min of work	After 15 min of work

7.4.8 Biological Hazards

Several hazards of a biological nature exist at this site which may cause physical trauma to, or infection of, site hazardous waste personnel. The more important of these biological hazards at Walker Properties site are canines, rodents and their fleas (i.e., any insect of the order Siphonaptera) and ticks (blood sucking arachnids of the superfamily Ixodoidea).

Because of the industrial and residential nature of this area of Los Angeles County, canines may be encountered as either guard dogs, strays or dog packs. Encounters with these animals may result in physical trauma and the possible transmission of disease, including rabies. A guard dog (Lady) has been used by Gross Construction, a tenant on Parcel 1 of the Walker Properties site. Stray dogs have been observed near the property during site visits.

Before commencing the site investigation, the Walker Properties site will be cleared of tenants and guard dogs. However, site crews should be mindful of the presence of stray dogs in the site vicinity and take precautions to avoid interaction with them.

Rodents and their fleas are of particular concern at any time of year in the southwestern United States, but particularly during spring, summer and early fall, their period of greatest activity. Principal hazards associated with rodents include bites and scratches, rat bite fever and Sylvatic Plague (the local endemic form of Bubonic Plague). Plague is transmitted by flea bites from sick, dying or dead rodents. Site crews should be mindful of the hazards associated with interaction with these animals or their parasites.

Ticks are blood sucking arachnids that transmit a variety of rickettsial (i.e., Rocky Mountain spotted fever) and viral (Colorado tick fever) diseases. These arachnids are particularly attracted to white, the color of Tyvek. Site crews should examine themselves for the presence of ticks at the end of shifts and advise the Site Health and Safety Coordinator if any are found.

7.4.9 Noise

Noise is defined as unwanted sound in the form of vibration conducted through liquids, solids, or gases. The effects of noise on man include the following:

- Psychological effects;
- Interference with communication by speech, job performance, and safety; and
- Physiological damage (i.e., hearing loss).

Psychological effects included the tension and stress that accumulate after repeated or continuous exposure to noise over the long term. Psychological effects often express themselves in sudden outbursts of anger or more insidiously as behavior aberrations. Over the short term, noise blocks out communications which may lead to safety hazards that impact job performance. Physiological damage is a long-term impact of noise that may result in hearing loss.

The factors that affect the degree and extent of hearing loss are intensity or loudness of the noise, type of noise, period of exposure each day, total work duration, and distance from the source. The Permissible Exposure Levels (PELs) for noise as measured in decibels (dBA) are provided below.

PELs FOR NOISE

Duration (per day)	Measurement (dBA)
8 hours	90
6 hours	92
4 hours	95
3 hours	97
2 hours	100
1 1/5 hours	102
1 hour	105
30 min	110
15 min	115

Where eight-hour time-weighted averages are 85 dBA or greater, a hearing conservation program is required. This includes an initial audiogram to establish a baseline on the employee's hearing ability, followed by an annual audiogram to measure hearing conservation program should also allow employee access to their audiogram records.

OSHA 29 CFR 1910.5 stipulates that when employees are subject to sound that exceeds the PEL, feasible administrative or engineering controls shall be utilized. If controls fail to reduce sound exposure to within the PEL, personal protective equipment must be provided and used to decrease sound levels to within the PEL. Use of personal protective equipment (e.g., ear plugs or muffs) should be implemented immediately upon discovery of sound levels above the action level pending evaluation of suitable engineering controls. Exposure to impact noise should not exceed the 140 dBA peak sound level.

The potential for loud noise at the Walker Properties site will be associated with demolition and excavation activities. Other proposed work activities (i.e., soil and sump sampling) will have a low potential for noise generation.

7.5 RISK ASSESSMENT

Chemicals known to have been detected at Walker Properties site include metals, PCBs, halogenated volatile organics, nonhalogenated volatile aromatics and polynuclear hydrocarbons (see Table 7.1). The use of personal protective clothing and equipment will provide limited protection against anticipated low level exposure. Routine air monitoring will be performed during all demolition, sampling and excavation operations.

Exposure to halogenated volatile organics, nonhalogenated volatile aromatics and polynuclear hydrocarbons occurs through direct handling of contaminated soil (dermal contact), inhalation and oral ingestion of contaminated particles. The risk of this exposure can be reduced through the use of appropriate personal protective equipment and clothing and adherence to work practices which minimize dust generation, skin exposure, inhalation and ingestion.

For protection from exposure to halogenated and nonhalogenated volatile organics on site, APRs with organic vapor/acid gas cartridges will be used. Organic vapor monitoring will be required to determine suitability of respiratory protection. If necessary, personnel will upgrade to Level B protection by using self contained breathing apparatus. what?

PCB

PCB exposure occurs primarily through direct skin contact. Inhalation of PCB contaminated dust particles may also be a route of exposure. Both acute and chronic exposure can cause chloracne and liver damage. The use of personal protective clothing and dual cartridge APRs with combination organic vapor/acid gas cartridge and High Efficiency

Particulate Air (HEPA) filters will provide protection to anticipated low level concentrations of these compounds.

Metals including barium, copper and lead have been confirmed on site at concentrations that meet or exceed ten times the Soluble Threshold Limit Concentration (STLC) (Title 22, California Code of Regulations, Article 11, Section 66699(b)). Under normal site working conditions, no significant exposures to airborne metal concentrations are expected when APRs are worn.

7.6 AIR MONITORING PLAN

The primary instruments for air and worker exposure monitoring will be direct reading instruments, including the HNu Photoionization detector (PID) Model PI 101, Photovac TIP I, Gastechtor Model 1314 explosimeter and a Heath Consultants Detecto-Pak II Flame ionization detector (FID). Sampling for particulates, PCBs and organic vapors will be conducted using intrinsically safe personal sample pumps equipped with filter cassettes for particulates and PCBs and charcoal tube for organic vapors. Air monitoring will be performed in accordance with the strategy outlined in Table 7.3. A summary of responses for various action levels is provided in Table 7.4.

A meteorological station will be set up on site to monitor and record changing wind speed and directions during the site investigation. An orange wind sock will be erected to provide site workers with a visual wind direction reference. Proper quality control documentations, filter/sample handling and quality assurance/quality control procedures will be followed.

7.7 PERSONAL PROTECTION EQUIPMENT AND WORK ZONES

The type of protective clothing used by personnel will depend on the task and work zone. This section provides a brief description of the site work zones (see Figure 7.2) and the type of protective clothing to be worn in each. Figure 7.2 also shows the evacuation route which is through the fence along the roadway at Bloomfield Avenue. Work zone boundaries will be delineated in the field by the use of temporary fences, barriers and flagging. The designated meeting place in case of evacuation will be determined each day in the field, based on the field activity planned.

7.7.1 Clean Zone

The clean zone covers all areas outside of the contamination reduction and exclusion zones. It is the location where administrative and support functions (command post, first aid station, decontamination trailer, showers, toilets, rest area, etc.) will be performed to keep the operation running smoothly. Level D protection will be worn in this area.

7.7.2 Contaminant Reduction Zone

This zone includes the areas near the Exclusion Zones and is the zone where the process of decontamination occurs for personnel exiting the Exclusion Zone. The bridge between the contaminant Reduction Zone and the clean zone will be the decontamination trailer.

7.7.3 Exclusion Zone

The exclusion zone is the area where contaminated soil is known or suspected to be located. The personal protection equipment to be used will depend on task assignment, work areas, and wind direction (i.e., soil sampling will be performed in Level C).

TABLE 7.4

ACTION LEVELS

Monitoring Method	Level	Action
• HNu • Photovac TIP I	>1 ppm above background at downwind perimeter.	Implement control measures - shutdown area.
• PID – HNu?	>53 ppm in the EBZ	Upgrade to Level B
• Explosimeter	10% LEL	Constant readings to be taken
	>25% LEL in area of augering	Evacuate - Emergency Response

1. EBZ = Employee Breathing Zone
2. LEL = Lower Explosive Limit

20%? per OSHA?

PJB/B150101.DOC

7/26?

TABLE 7.3

AIR MONITORING STRATEGY FOR WALKER PROPERTIES

• HNu Photoionization 10.2 eV Probe • Photovac TIP I • Heath Consultants Detecto-Pak II Flame Ionization Detector	Community Monitoring: Readings will be taken every hour at the downwind perimeter of the exclusion zone. If positive readings occur immediately in the downwind perimeter, the frequency of the perimeter monitoring will be increased to every 15 minutes. The unit will be calibrated daily.
	Personnel Monitoring: Readings will be taken by OVA every half hour in the employee breathing zone. Organic vapor, particulate and PCB monitoring will be performed using intrinsically safe personal sample pumps.
• Gastechtor Model 1314 O_2/Explosimeter	Pump-operated unit will be used. The unit shall be placed in the areas where surface soil or sump sampling is being performed. The preset alarm will be activated at 25% LEL. The unit will be calibrated daily.

Personal protective equipment will be required during the course of the site investigation. Selection will be based primarily on hazard assessment data and work task requirements. During specific soil disturbance activities, the site will be monitored for potentially hazardous contaminants as described in Section 7.6.

Based upon site history, the initial level of protection for all sampling activities in the Exclusion Zone is Level C. If warranted by sampling data and existing site conditions, work activities will be downgraded ~~to Level~~ D to increase worker comfort.

Respirator Selection and Fit Test: Prior to site work in Level C protection, the Site Manager or the Site Health and Safety Coordinator is responsible to assist in the selection, fit testing and training in the proper use of the air purifying respirators to be used by Site Personnel. The Health and Safety Officer shall maintain documentation of size, brand and model number of air purifying respirator with which each site member has achieved a successful face seal fit.

7.8 PERSONNEL DECONTAMINATION PROCEDURES

DECON

Decontamination procedures protect personnel from hazardous substances that they have been exposed to while working on the site. The contamination reduction zone where the decontamination procedures will be performed shall be located outside the perimeter of the contamination zone (Figure 7.2).

The following is a list of equipment needed for decontamination procedures:

- Trisodium phosphate (TSP)
- Water - tap/deionized
- Scrub brushes
- Buckets and wash tubs

- Solvents - hexane and acetone
- Plastic sheeting
- Trash cans and bags
- Masking and duct tape
- Towels
- Banner tape and marker cones
- Hand soap

The decontamination sequence begins with personnel placing their equipment on plastic sheeting outside the contamination reduction area. Personnel then proceed into the contamination reduction areas to decontaminate their boots and outer gloves, by scraping, brushing, or wiping off any substances adhering to their outer clothing. Personnel then proceed to remove tape and outer gloves. The Tyvek coveralls then are removed and placed into a trash bag, followed by the removal of the APR and inner gloves. Personnel then enter the decontamination trailer, complete garmet removal, enter the shower area from the contaminated side and wash with soap and water. After showering workers will exit shower stalls to the clean change room dress in Level D or street clothes and exit to the clean zone.

Decontamination of sampling equipment will include a TSP wash, followed by rinsing with tap water, acetone, hexane, and deionized water. An APR will be used when decontaminating sampling equipment with solvents to reduce employee exposure.

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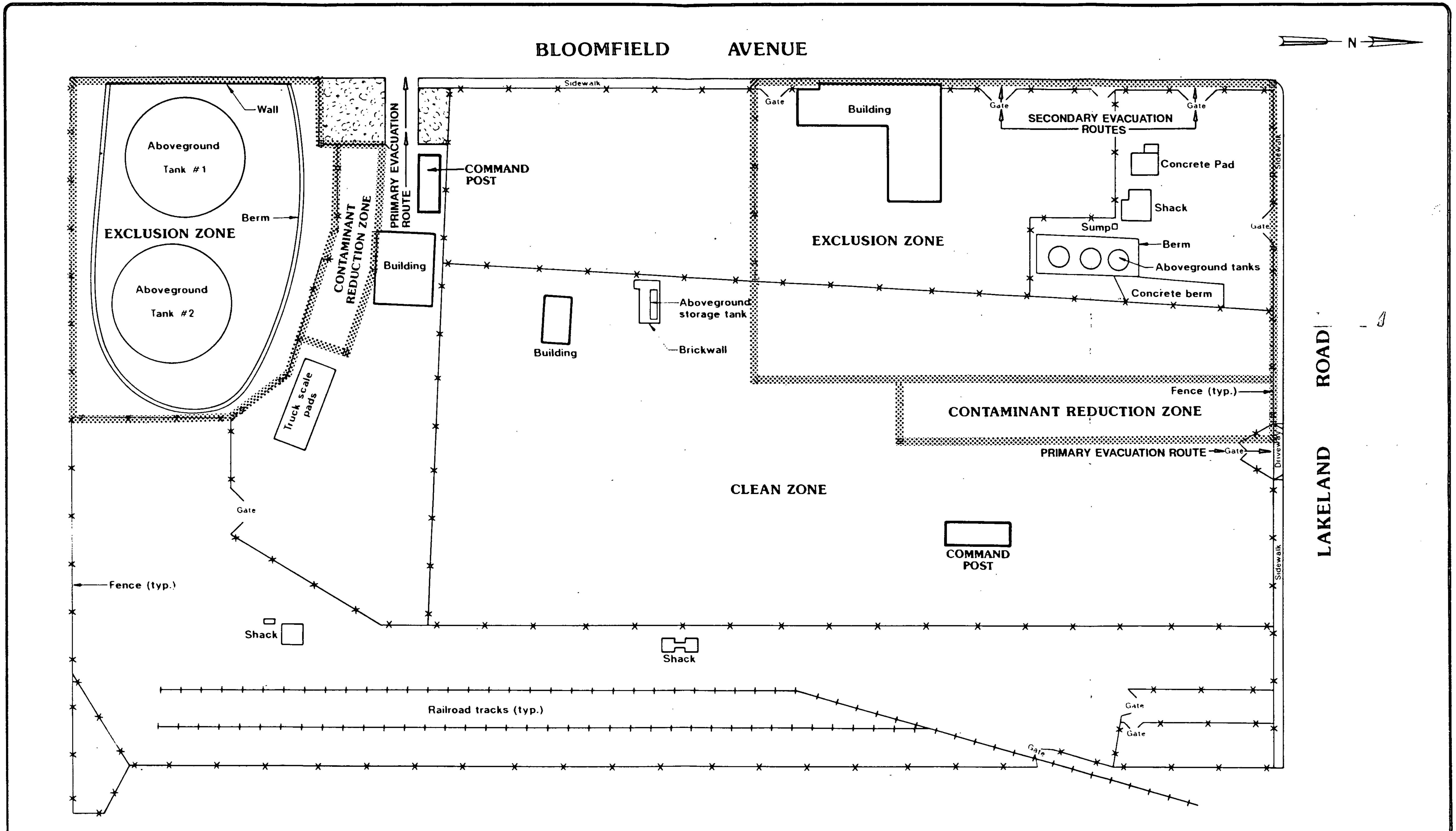

jb 7/27/88

NOTE: Property boundaries and facility locations are approximate

EMCON Associates

0 100 200 300 Feet

SCALE

WALKER PROPERTIES
SANTA FE SPRINGS, CALIFORNIA

SITE WORK ZONES

FIGURE 7.2

PROJECT NO. B15-01.01

7.9 GENERAL SAFE WORKING PRACTICES AND ACCIDENT PREVENTION PROGRAM

An accident prevention plan is included in the HASP to comply with OSHA requirements and to assure a safe and healthful work environment for the on-site personnel. The Site Manager or Site Health and Safety Coordinator shall be responsible for implementation of this accident prevention plan and all on-site personnel will be accountable for reading, understanding, and following the guidelines contained herein.

- The initial indoctrination of site personnel and site specific safety training will be accomplished during the training session conducted by the Health and Safety Officer. Additionally, site personnel will receive site orientation and review the HASP on their first day on site, prior to initiation of actual field work.

- The Site Manager or Site Health and Safety Coordinator will be responsible for maintaining a clean job site free from hazards and providing safe access and egress from the site. Cones and high visibility surveyor tape will be utilized for traffic control, and limiting access to hazardous and restricted areas.

- An on-site transportable cellular phone will be available during working hours. Emergency phone numbers will be posted for the fire department, ambulance service and the nearest emergency medical clinic/hospital. The fastest route to the clinic/hospital, along with emergency telephone numbers shall be prominently posted in the work area. Site personnel will be trained in emergency procedures and the availability of emergency assistance during the personnel training session. The Site Manager or Health and Safety Coordinator will be the lead person in all emergency situations.

- A tailgate safety meeting shall be conducted to discuss pertinent site safety topics at the beginning of each shift, whenever new personnel arrive at the job site, and as site conditions change. These meetings shall be conducted by the Heath and Safety Coordinator and as a result of each meeting, a completed tailgate safety meeting form shall be posted at the job site.

- A sample Tailgate Safety Meeting Form is presented in Appendix A of this Chapter.

- The Site Health and Safety Coordinator shall perform a written health and safety field audit weekly during site operations, to assure compliance with the provisions of the HASP.

Should an accident occur, the Site Manager or Site Health and Safety Coordinator will immediately notify the Health and Safety Officer, complete an accident report and investigate the cause. Any recommended hazard control measures must be discussed with the Health and Safety Officer and meet his approval, prior to implementation. Any chemical exposures or occupational injuries and illnesses shall also be reported to the Health and Safety Officer and recorded, if recordable on a Cal-OSHA Form No 200. If a fatality occurs, five or more persons are admitted to a hospital, or property damage in excess of $700 occurs, the accident will be reported immediately to the State of California Department of Industrial Relations. Records of all site accidents and first aid treatments will be maintained by the Site Manager or Health and Safety Coordinator. Additionally, records of recordable work place injuries and illnesses are routinely maintained at EMCON's office for at least five years as required by OSHA.

7.10 ACTIVITY HAZARD ANALYSIS

The on-site protocols consist of drilling borings with hollow-stem auger equipment to collect soil samples or to install groundwater monitoring wells, hand augering or trowelling to collect soil samples, site excavation and air sampling. The potential hazards of each activity, and the control measures that should be used to minimize or eliminate them, are discussed below.

7.10.1 Subsurface Soil Sampling

Potential hazards include exposure to organic vapors, heat stress and noise. The site will be monitored for organic vapors/gases, as stated in Section 7.6 to minimize exposure hazards. If necessary, the site will be evacuated, or upgraded to Level B protection. In this case respiratory protection shall be utilized for control of exposure to particulates/vapor. Techniques to suppress airborne particulates/vapor will include water misting of boreholes or excavations. Heat stress will be monitored, depending upon ambient conditions. Disposable hearing protection devices shall be available to site personnel upon request.

The Underground Service Alert telephone service will be utilized and no drilling will be allowed within ~~five feet~~ of marked underground utilities ~~or within twenty feet~~ of overhead electrical hazards. The following safety provisions will be adhered to by the drill rig operator:

- Before raising the drill rig mast in the vicinity of electrical power lines, the operator shall walk completely around the drill rig to determine the distance of the rig to the nearest power line when the mast is being raised (should be greater than twenty feet). Any questions regarding the appropriateness of a drilling location should be brought to the attention of the Site Health and Safety Coordinator.

- Before drilling, the location must be adequately cleaned and leveled to accommodate the drill rig.

- Housekeeping: Suitable storage for all tools, materials and supplies shall be provided. Pipe, drill rods, casings, augers and similar drilling tools shall be orderly stacked to prevent rolling, spreading or sliding.

- Work areas and drilling platforms shall be kept free of materials, obstructions and substances that could cause a surface to become slick or otherwise hazardous.

- After stabilizing and levelling the drill rig, all unnecessary personnel should be cleared from the area immediately to the rear and the sides of the drill mast prior to its raising.

- Augers shall be used in accordance with manufacturer's recommended methods of securing the auger to the power coupling. Additionally, the operator and tool handler shall establish a safe system of responsibilities for the drilling, auger connecting and disconnecting, and auger fork insert/removal.

- Augers shall only be cleaned when the drill rig is in neutral and the auger has ceased to rotate.

- Unattended boreholes must be properly covered or otherwise protected.

7.10.2 Collection of Surface Soil Samples

Surface Sample

The same potential hazards and control measures exist as described for the drilling phase. Chemical resistant gloves shall be worn by site personnel when collecting soil samples.

7.10.3 Soil Excavation

The potential hazards and control measures that exist for subsurface soil sampling will be present during soil excavation. The following safety provisions will be followed by site personnel during soil excavation:

- Employees not involved in soil excavation will stay at a safe distance (>150 feet) upwind of the work area. Employees operating excavation (heavy) equipment will be positioned upwind.

- Before excavation the location must be adequately cleared to accommodate equipment.

- Before operating equipment it shall be properly secured and stabilized into proper operating configuration (e.g., backhoes must extend and plant stabilization arms, etc.).

- Equipment operators shall operate equipment from enclosed cabins while in contaminated areas.

- Site personnel shall not enter excavated trenches or excavations greater than five feet in depth which have not been properly shored or sloped to prevent cave in.

- Equipment shall be cleaned prior to storage or transportation off site.

- Housekeeping: Suitable storage for all tools, materials and supplies shall be provided.

7.10.4 Air Samples

Perimeter air sampling stations will be operated for background air contaminants before and during drilling and excavation operations. There is no significant hazard to personnel setting up these sample stations. Personnel conducting air monitoring with an HNu Photo-ionization detector or Flame Ionization Detector at the drilling location itself will require use of personal protective equipment.

7.11 PERSONNEL TRAINING REQUIREMENTS

At the time of assignment to this site investigation, all personnel shall have completed at least 40 hours of off-site instruction in the health and safety issues involved with hazardous substance site work. Additionally, site personnel must have a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor. On-site management responsible for supervising personnel engaged in site work shall have at least eight additional hours of specialized training on managing such operations. Employees who can show by documentation of work experience and/or training that they have had the equivalent to the stated requirements shall be considered as meeting these initial training requirement.

To ensure that all site personnel understand the hazards associated with this specific site investigation, the Health and Safety Officer will design and implement a training program. The Site Health and Safety Coordinator shall assure that all personnel have received the required training prior to working on site.

The following outline is to be used by the Site Health and Safety Coordinator for training personnel that will work at the Walker Properties site.

General Field Safety Techniques

- Responsibilities
  - Overview of the Site Health and Safety Plan
- Medical Program
  - Reasons for Health Surveillance
- Site Work Zones
- Vehicle (cars, trucks, etc.)
  - Operation
- Site Air Monitoring
- Potential Hazardous Contaminants Present
  - Chemical hazards at the specific site (toxicity, symptomology)
- Contingency and Response
- Use of Field Equipment and Supplies
  - Work tools
  - Sampling equipment
  - Monitoring equipment
- Site Control and Security
- Buddy System
  - Hand signals
- Work Limitations
  - Weather
  - Fatigue
  - Heat stress and stroke
  - Hours of work

Personal Protection Equipment and Clothing

- General
- Availability
- Hearing Protective Devices

- Respiratory Protection (selection, fit test, donning and use)
- Personal Protective Clothing (selection, inspection, don/doff)
- Personal Protection for Level C
- Limitations of Clothing and Equipment
- Decontamination of Clothing and Equipment
- Disposal of Contaminated Clothing and Equipment

<u>Site Review</u>

- Site Maps
- Pertinent Site History Information
- Safety Information

<u>Emergency Assistance</u>

- Transportation
- Cardiopulmonary Resuscitation/First-Aid
- Availability of Emergency Services
- Emergency Assistance On-Site

<u>Sampling Techniques</u>

- Hazards of Sampling

The Site Health and Safety Coordinator shall maintain documentation that each site worker has successfully completed this training program. Each site worker must sign and date a Personal Acknowledgement, see Appendix B, stating that he or she has read and understood the HASP, and attended the requisite training.

The Site Health and Safety Coordinator must conduct and document (see Appendix A) tailgate safety meeting at the beginning of each shift, whenever new personnel arrive at the site, as site conditions change, or as needed.

7.12 MEDICAL SURVEILLANCE PROGRAM

Establishment of a medical surveillance program is essential for the protection of site personnel. The purpose of the program is threefold:

- To establish a baseline picture of health against which future changes can be measured
- To identify any underlying illnesses or conditions that might be aggravated by chemical exposures or job activities, (i.e.,) use of respiratory protective equipment
- To allow recognition of any abnormalities at the earliest opportunity, so that corrective measures can be implemented

Baseline: All on-site personnel will have an initial baseline examination, prior to mobilization. All subcontractor personnel will also be subject to the medical examination requirements. The EMCON baseline physical/medical examination includes the following basic components:

- Occupational history
- Family history
- Medical history
- Physical examination
- Basic blood and urine analyses
- Pulmonary function tests
- X-ray
- Vision and hearing testing

7.13 EMERGENCY RESPONSE PLANS, MEDICAL ASSISTANCE AND FIRST AID

Prior to work start up, an emergency medical assistance network will be established. The fire department, ambulance service, poison control center and hospital with an emergency room are identified in Table 7.5. A vehicle shall be available on site during all work activities to transport injured personnel to the identified emergency medical facilities. The designated route to that facility is described in Table 7.5 and shown in Figure 7.3. A transportable cellular telephone will be located in the support zone to communicate with off site emergency assistance. Telephone numbers and locations for emergency room assistance shall be posted at the site.

At a minimum, the Site Health and Safety Coordinator will be certified to render Multi Media Standard First-aid and Adult Cardiopulmonary Resuscitation (CPR) prior to initiation of field activities. A first-aid kit and a dedicated emergency SCBA shall be available at the site. An adequate supply of fresh water and a portable emergency eye wash will be available at each work site.

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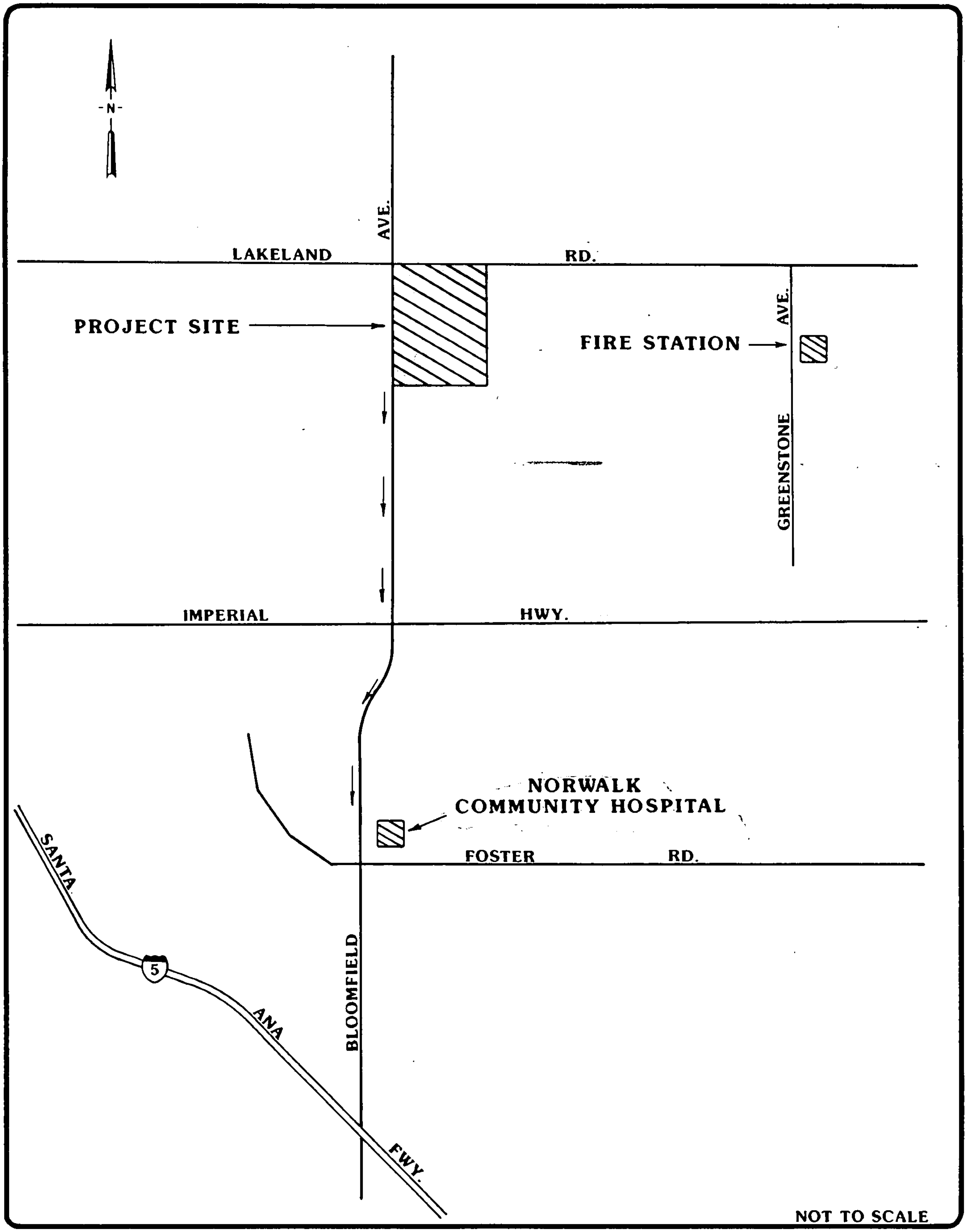

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WALKER PROPERTIES
11102 BLOOMFIELD AVE.
SANTA FE SPRINGS, CALIFORNIA

VICINITY MAP

FIGURE
7.3
PROJECT NO.
B15-01.01

TABLE 7.5

EMERGENCY ASSISTANCE INFORMATION

Fire Department/Paramedic/Ambulance Service	911
Nearest Fire Department/Paramedic Location 11300 Greenstone Avenue Sante Fe Springs, California	(213)944-9713
Poison Information Center (Los Angeles County)	(213)484-5151
Nearest Hospital with Emergency Room Norwalk Community Hospital 13222 Bloomfield Avenue Norwalk, California	(213)863-4763
Health and Safety Officer Charles F. Russ, Ph.D.	(818)841-1160 (Office Hours 8:00 a.m. to 5:00 p.m.) (818)763-4273 (After Office Hours)

Recommended route to Norwalk Community Hospital from the Walker Properties site:

From the site turn left (south) on to Bloomfield Avenue. Proceed south on Bloomfield, across Imperial Highway to the intersection of Bloomfield and Foster Road. The hospital is located at the northeast corner of Bloomfield and Foster, approximately 1.3 miles south of the site (see Figure 7.3).

APPENDIX A

TAILGATE SAFETY MEETING FORM

Date: ____________ Time: _________________ Job Number: ________________

Client: ___________________________ Address: ___________________________

Site Location: ____

Scope of Work: ____

____

Safety Topics Presented

Protective Clothing/Equipment: ____

____

Chemical Hazards: ____

____

Physical Hazards: ____

____

Special Equipment: ____

____

Other: ____

Emergency Procedures: ____

____

Hospital: _____________ Phone: _________ Ambulance Phone: ___________

Hospital Address and Route: ____

____

ATTENDEES

NAME PRINTED	SIGNATURE

Meeting Conducted By: ______________________ ______________________
Name Printed Signature

APPENDIX B

PERSONAL ACKNOWLEDGEMENT

As a component of the Health and Safety Plan (HASP) designed to provide personnel safety during the Remedial Investigation (RI) at the Walker Properties site in Santa Fe Springs, California, you are required to receive training as described in the HASP (Chapter 4) prior to working at the site. Additionally, you are required to read and understand the HASP. When you have fulfilled these requirements, please sign and date this personal acknowledgement:

______________________________	______________________________
Signature	Name (Printed)
______________________________	
Date	

8.0 COMMUNITY RELATIONS PROGRAM WORKPLAN

8.1 INTRODUCTION

Purpose

This Community Relations Program (CRP) Workplan describes the community relations activities to be implemented during site investigation and remedial action (cleanup) activities at the Walker Properties site located in Santa Fe Springs, California. The purpose of this program is to inform the community and involve interested individuals in the decision-making process by releasing project information in a timely manner. The goal of the CRP Workplan is to develop a three-way communication channel between the owner of the property (Mr. George Walker), the Los Angeles County Department of Health Services (LADHS), and the community.

Mr. Walker has entered into an agreement with the LADHS to prepare a Remedial Investigation and Feasibility Study (RI/FS) Workplan and to complete all necessary remedial actions at the property. Mr. Walker has contracted EMCON Associates (EMCON) to prepare the workplan and implement a community relations program.

EMCON will review government agency files [California Department of Health Services (DHS), LA County DHS (LADHS) and the City of Santa Fe Springs (City)] to identify necessary site information to begin contacting local officials, agency representatives and interested citizens in the City of Santa Fe Springs. This information will help involved parties to better understand key community concerns regarding the Walker Properties site during each phase of the RI/FS.

The Community Relations Plan for the Walker Properties site is divided into the following sections:

- Community Relations Background
- Goals and Implementation Strategies of the CRP
- Community Relations Procedures
- Scheduling
- Public Meeting Locations/Information Repositories
- List of Potential Community Contacts

8.2 COMMUNITY RELATIONS BACKGROUND

8.2.1 Site Description and History

The Walker Properties site is located on the southeast corner of the intersection of Lakeland Road and Bloomfield Avenue in Santa Fe Springs, California. The following site history was developed based on information provided by the current property owner, Mr. Walker, and officials from the City of Santa Fe Springs.

Reportedly, the property was originally developed by Getty Oil Company in the early 1900's for use as a hydrocarbon handling facility.

Aerial photographs from the 1950's and 1960's (provided by the City) show several sumps on the property which were reportedly used for the disposal of drilling fluids and muds. In 1967 when the entire eastern portion of the site was graded, mud and debris were removed from the sumps and were spread about the site to dry. The sumps were re-filled to grade using a mixture of this air-dried material and clean soil. A natural drainage course in the eastern portion of the property was also filled to grade and was replaced by the City with a buried 42-inch storm sewer line.

In the late 1950's or early 1960's Lakewood Oil Service, Inc. (Lakewood) began leasing the northwestern portion of the property for use as a waste oil transfer station. Lakewood Oil ceased operations in the early 1980's when they went bankrupt. Powerine Oil Company leased the two large above ground storage tanks located on the southwestern end of the property. One of these tanks reportedly held jet fuel and the other contained crude oil. In addition, Powerine Oil used a butane gas distribution line which ran from their refinery (located on the northwest corner of the intersection of Lakeland Road and Bloomfield Avenue), south on Bloomfield Road, east across the Walker Properties site to the railroad spur located near the eastern boundary. The exact location of this pipeline is not known. Powerine Oil emptied the large storage tanks, abandoned the distribution line and left the Walker Properties site when they went bankrupt in the early 1980's.

Airco, a company which bought carbon dioxide from the Powerine Oil Refinery, left the property at the same time as Powerine.

When Mr. Walker purchased the property in 1979, both Lakewood Oil and Powerine Oil continued as tenants until their respective bankruptcies. Mr. Walker used a portion of the property as offices and as a storage yard for empty rubbish trucks and rubbish containers.

Currently, portions of the property are being leased by Balboa-Pacific Corporation, a business which developed a transportable treatment unit for wastes and wastewaters, and by Gross Construction Company for the storage of heavy construction machinery and equipment.

8.2.2 Summary of Contamination Investigation

Several investigations of contamination at the Walker Properties site have been performed since 1985. To summarize briefly, polychlorinated biphenyl (PCB) contaminated oily soil has been found on Parcel 3. No releases from the two large tanks on Parcel 2 have been detected, but further examination of this parcel will be performed after the tanks are removed. Parcel 1 has been eliminated from further investigation because previous sampling has shown that this parcel has not been adversely affected by previous uses of the property.

8.2.3 History of Community Involvement

No formal community relations events have occurred during the course of the previous investigation activities conducted at the site. However, the property has been an agenda item at several meetings of the Santa Fe Springs City Council and Redevelopment Agency meetings. The main issue discussed at these meetings was the City's potential funding of environmental investigations at the site. The dates of the meetings are as follows:

- 12/12/85
- 12/17/85
- 12/26/85
- 11/24/86
- 5/18/87
- 7/2/87
- 3/23/87
- 5/26/88

— synopsis?

8.2.4 Potential Issues and Community Concerns

Currently, as throughout the past history of this site, there seems to be a low level of community concern about contamination from the Walker Properties site. This low level of concern may be attributed to the following factors:

- No residences are located adjacent to the Walker Properties site. The nearest private residence is approximately one-half mile from the property.
- The conditions at the site have not been well-publicized.

- Other hazardous substance release sites in the area (Neville Chemical Company and Waste Disposal Inc.) are much larger and are perceived to pose greater potential risks to public health.

The CRP for this project will likely cause an increase in public involvement. Potential community concerns may include potential threat to health, effects on property values and governmental agency credibility.

To fully understand the community concern regarding the Walker Properties site and to determine the specific ways and community would like to be involved through the RI/FS process, EMCON will actively conduct and/or participate in the community interview process.

This process involves the following:

- Identify contact people in the community.
- Contact local governmental officials.
- Meet with residents, community groups and other interested individuals.

8.3 GOALS AND IMPLEMENTATION STRATEGIES OF THE CRP

The goals and implementation strategies for the CRP during the remedial investigation and clean-up activities are as follows:

- Provide the community with information: EMCON Associates will provide accurate and timely information to concerned individuals during each phase of the sampling and clean-up activities.

  Information will be disseminated in any or all of the following ways in order to provide timely project information and to receive community inquiries:

  - Fact Sheets/Newsletters
  - News Releases to local newspapers

- Public Notices
- Special Public Meetings to gather information and input

EMCON will work with the LADHS to develop fact sheets and initiate community meetings, workshops and news releases in an informative and easily understood style.

- Establish three-way communications among Walker, LADHS and the community: Special community meetings to involve concerned individuals may be scheduled to help keep the flow of communications open to further identify key community concerns throughout the project.

- Provide citizen input and involvement: Throughout the RI/FS, all workplans, technical documents and fact sheets on the project will be posted in the public information repositories to allow for public inquiry and comment in advance of sampling activities. The posting of these documents will be announced in project fact sheets.

- Organize community inquiry by designating key contact person: Inquiries will be addressed to a designated site contact person who will be identified by name, address and telephone number on all fact sheets, notices, media releases, meeting announcements, etc., to help organize and coordinate community input and interest. Additionally, a LADHS contact person will be identified on all community relations information made available to the public. A responsiveness summary, describing and responding to verbal and written comments he/she may receive on the Walker Properties site RI/FS, will be prepared upon conclusion of the RI/FS.

8.4 COMMUNITY RELATIONS PROCEDURES

Procedures will be established in order to provide information about the project and to gather information from the community and respond to citizens' inquiries in an organized and timely fashion. The following procedures will encourage and document community concerns during the course of the RI/FS process:

- Establish Information Repositories: EMCON will identify accessible locations near the Walker Properties site such as public libraries. These locations will house site workplans, the CRP, the RI and FS Reports, as well as fact sheets, and other appropriate information.

- Create a ~~Mailing List:~~ EMCON will create a mailing list of elected officials, interest groups, citizens, agency representatives and news media members for distribution of information via fact sheets during the course of the RI/FS.

- Prepare Fact Sheet/Technical Summaries: Fact sheets will be prepared which provide a summary of pertinent activities at the project site. Fact sheets may also be used as a method for announcing the time and location of public meetings.

- Media Releases: Prepared statements might be prepared to announce significant findings during the RI/FS, or to notify the community of any public meetings.

- Public Meetings: A public meeting will be scheduled as soon as practicable to provide the community with information about the project and to gather information about community concerns.

- Responsiveness Summary: A responsiveness summary, describing and responding to comments received from the community will be included in the RI/FS Report and the Remedial Action Plan.

- Review/Revise the CRP: As necessary, the CRP will be revised to ensure community concerns are being addressed.

8.5 SCHEDULING

A schedule of community relations activities based on technical milestones is provided in Table 8.1.

8.6 PUBLIC MEETING LOCATIONS/INFORMATION REPOSITORIES

Arrangements have been made to use the Santa Fe Springs Public Library for public meetings and as an Information Repository.

The sequence of activities planned for the investigation of Parcel 3 includes the following elements:

Parcel 3

(1) Demolition and removal of above ground structures.

(2) Removal of under ground sumps. Pub Wks ?

(3) Excavation and removal of visibly oil soil.

(4) Post-excavation soil sampling and soil boring.

(5) Laboratory analysis of soil samples.

If groundwater, the third element, is determined to be at risk of being contaminated based on the results of the investigation of Parcels 2 and 3, an investigation will proceed which will involve the following sequence of events:

GW

(1) Drill, install and develop groundwater monitoring wells.

(2) Survey locations and elevations of wells.

(3) Purge and sample wells.

(4) Laboratory analysis of water samples.

(5) Feasibility Study for groundwater element.

9.2 IMPLEMENTATION SCHEDULE

The proposed implementation schedule for the RI/FS for the Walker Properties site is presented in Figure 9.1. The schedule is presented as a flow chart depicting the interrelationships between the three phases of the investigation.

TABLE 8.1

WALKER PROPERTIES

SCHEDULE OF COMMUNITY RELATIONS ACTIVITIES

	Technical Milestone						
Community Relations Activities	Prior to Start of Remedial Investigation (RI)	RI (Start)	RI Field Investigation	Feasibility Study (FS)	RI/FS Report	Draft Remedial Action Plan (RAP)	Final RAP
• Information Repository			(Update as necessary)				
• Mailing List			(Update/Expand as necessary)				
• Fact Sheets/Technical Summaries	X		(As Necessary)				
• Media Release	X					X	
• Public Meeting	X		(Other Meetings as necessary)			X	
• Responsiveness Summary			(As Necessary)				
• CRP Review/Revision			(As Necessary)				

Public Meeting Location:

Santa Fe Springs Public Library
Public Meeting Room (seats 80)
11700 East Telegraph Road
Santa Fe Springs, California 90670

Information Repository Sites:

Santa Fe Springs Public Library
11700 East Telegraph Road
Santa Fe Springs, California 90670

Reference Librarian - Diane Katlin

8.7 LIST OF POTENTIAL COMMUNITY CONTACTS AND INTERESTED PARTIES

The following represents a list of potential interviewees and other interested parties:

<u>Public Agency Contacts</u>

George Beaty, Director of Env. Mgmt.
Bob Wilson, Fire Department
Don Powell, City Manager

City of Santa Fe Springs
11710 Telegraph Road
Santa Fe Springs, CA 90670
(213)868-0511

Nestor Acedera
California Department of Health Services
Toxic Substances Control Division
107 South Broadway, Room 7028
Los Angeles, CA 90012
(213)620-2380

William Jones
Los Angeles County Department of Health Services
2615 South Grand Avenue, 6th Floor
Los Angeles, CA 90007
(213)744-3233

Carl Sjoberg
Los Angeles County Public Works Department
Waste Management Division
Post Office Box 4089
Los Angeles, CA 90051
(213)226-4019

Robert P. Ghirelli
Regional Water Quality Control Board
107 South Broadway, Room 4027
Los Angeles, CA 90012
(213)620-4460

Elected Officials

Esteban Torres, U.S. Congressman
8819 Whittier Blvd., Suite 101
Pico Rivera, CA 90660
(213)695-0702

Alan Cranston, U.S. Senator
5757 West Century Blvd., Room 515
Los Angeles, CA 90045
(213)215-2186

Pete Wilson, U.S. Senator
11111 Santa Monica Blvd.
Los Angeles, CA 90025
(213)209-6765

Cecil Green, State Senator
3056 State Capitol #4081
Sacramento, CA 95814
(916)445-6047

Bob Epple, State Assemblyman
13710 Studebaker Road, Suite 202
Norwalk, CA 90650
(213)929-1796

Pete Schabarum, County Supervisor
Los Angeles County Board of Supervisors
500 West Temple
Los Angeles, CA 90012
(213)974-1011

City of Santa Fe Springs - Council
11701 Telegraph Road
Santa Fe Springs, CA 90670
(213)868-0511

Mayor: Ronald S. Kernes
Mayor Pro Tem: Al Fuentes
Council: Lorenzo Sandoval
Albert Sharp
Betty Wilson

City of Norwalk
12700 Norwalk Blvd.
Norwalk, CA 90650

Mayor: Marel Rodriquez
Mayor Pro Tem: Grace Napolitano
Councilman: Robert White
Councilman: Luigi Vernola
Councilman: Mike Mendez

Media Contacts

Los Angeles Times, Southeast Section
17315 Studebaker Road
Cerritos, CA 90701
(213)924-8600

Los Angeles Herald Examiner
1111 South Broadway Boulevard
Los Angeles, CA 90015
(213)744-8000

Whittier Daily News
7037 Comstock Avenue
Whittier, CA 90602

Santa Fe Springs News
621 West Beverly Boulevard
Montebello, CA 90640

Nearby Property Owners and Other Interested Parties

Ms. Charleen M. Milburn
Hospital Administrator
Metropolitan State Hospital
11400 Norwalk Boulevard
Norwalk, CA 90650
(213)863-7011

Mr. William Bresnick
Texaco Company, Inc.
10 Universal City Plaza
Universal, CA 91608
(818)505-3023

CF Properties Inc.
Post Office Box 3301
Portland, OR

Powerine Oil Company
12354 Lakeland Road
Santa Fe Springs, CA 90670
(213)994-9111

Airco ?
2535 Del Amo Boulevard
Torrance, CA 90503
(213)533-8397

Nyals Polley
11042 Forest Place
Santa Fe Springs, CA 90670

Roy B. Carpenter Jr.
[redacted]

Betty L. Sanders
[redacted]

Forest Place Assoc. Ltd.
77 N. Oak Knoll Avenue No. 112
Pasadena, CA 91101

Gordon R. Coker
Post Office Box 3129
Santa Fe Springs, CA

?

E.J. Strecker
[redacted]

Whittier Equipment Rental
Post Office Box 831
Whittier, CA

Adamson Companies
12381 Wilshire Blvd.
Los Angeles, CA 90025

Greenstone Dev. Co. Inc.
11400 Greenstone Avenue
Santa Fe Springs, CA 90670

Magna Corp.
Post Office 16290
Houston, TX

Wilbur Bassett Jr.
12740 Lakeland Road
Santa Fe Springs, CA 90670

9.0 IMPLEMENTATION

The following paragraphs describe the three basic phases for implementation of the RI/FS Workplan at the Walker Properties site. These phases correspond to the three physical elements of the project (Parcel 2, Parcel 3 and groundwater) which will be addressed during the RI/FS. The details of the work to be performed are provided in Section 4.0, Workplan. A separate schedule for the implementation of the Community Relation Plan is provided in Table 8.1, Section 8.0.

9.1 IMPLEMENTATION SEQUENCE

The implementation sequence identifies the activities which are planned for each element of the RI/FS. The first element to be addressed will be Parcel 2.

The sequence of activities planned for the investigation of this parcel is as follows:

Parcel 2

(1) Decontamination and demolition of the above ground tanks.

(2) Inspection and sampling stockpiled soil.

(3) Drilling and sampling soil borings in the area of the removed tanks.

(4) Laboratory analysis of soil samples.

(5) Feasibility Study based on results of soil sampling.